

**A CROSS SECTIONAL ANALYSIS OF SELECTED PHYSICAL FITNESS  
VARIABLES AND POSTURAL DEFORMITIES ACROSS AGE AND  
GENDER OF SCHOOL CHILDREN OF NILGIRI DISTRICT**

A Thesis

submitted to the University of Calicut through the  
Department of Physical Education  
for the fulfillment of the requirement for the  
**DOCTOR OF PHILOSOPHY IN PHYSICAL EDUCATION**

*By*

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*Research Supervisor*

**Dr. K.P. MANOJ**

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University of Calicut



**DEPARTMENT OF PHYSICAL EDUCATION  
UNIVERSITY OF CALICUT  
December 2023**

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Director of Physical Education  
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Nilgiris, Tamil Nadu

## **DECLARATION**

I hereby declare that the work presented in the thesis entitled **“A cross sectional analysis of selected Physical fitness variables and Postural deformities across Age and Gender of school children of Nilgiri district”** is based on the original work done by me under the guidance of **Dr. K.P. Manoj**, University Director of Physical Education, University of Calicut and has not been included in any other thesis submitted previously for the award of any degree. The contents of the thesis are undergone plagiarism check using iThenticate software at C.H.M.K. Library, University of Calicut, and the similarity index found within the permissible limit. I also declare that the thesis is free from AI generated contents.

**Sariul Varghese**

Place:

**Dr. K.P. Manoj**  
(Research Supervisor)

Date:

**Dr. K.P. Manoj**  
University Director of Physical Education  
& Former Dean, Faculty of Education  
University of Calicut

## **CERTIFICATE**

This is to certify that the thesis entitled “**A cross sectional analysis of selected Physical fitness variables and Postural deformities across Age and Gender of school children of Nilgiri district**” submitted to the University of Calicut, in fulfillment of the requirements for the award of the degree of Doctor of Philosophy in Physical Education is recorded of original research work done by **Mr. Sariul Varghese.**, during the period of 2016 – 2023 of his study in the Department of Physical Education, University of Calicut, Thenjipalam, under my supervision and guidance and the thesis has not been previously submitted elsewhere for the award of any Degree/Diploma/Associate ship/Fellowship or any other similar title and it represents entirely an independent work on the part of the candidate.

**Signature of the Guide**

Place:

Date:

## Curriculum Vitae

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### PROFESSIONAL SUMMARY

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- 11 Years experience as a Physical Education, Nilgiri College of Arts and Science.
- 2 years experience as a Physical Education Teacher in Secondary & H.S.S & Collegiate Level.
- 3 years Specialization in Football
- 2 years Specialization in Volleyball
- Qualified Football Referee in Malapuram Dt-Kerala/Nilgiri Dt., Tamil Nadu - India
- National seminar and workshop at paper presentation on Health related topic's in varies universities.
- Theory classes on Health related topic's First Aid and Basic Life support in Higher Secondary Level .
- Experience in Officiating athletics and games in Keralotsav.
- Experience as an Official/Supporting judge in University Athletic Meets.
- Involved in Organizing the Cultural Programmers in Calicut University.
- Active Member in NSS in Organizing Public Welfare Camps in Remote Places.
- Team worker with good Interpersonal and communication skills.
- Master in Physical Education from Calicut University in Nov-2010
- PhD Research Scholar in Factor Structure of Analysis in Calicut University
- One Month attending the Special Training on physical fitness in U AE. Dubai.

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### PROFESSIONAL EXPERIENCE

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#### **Niligiri college of Arts and Science Thaloor (Affiliated to Bharthiyar University)**

Position Held : **Director, Dept. of Physical Education.**

Responsibilities : Physical Education & Training to the Students upto college Level.

: Coaching in Games and Athletic Events, Organizing Sports Meets in College Level



**Calicut University Teacher Education Kaniyampatta Waynad Dist.**

Position Held : Teacher in Physical Education.  
Duration : 1<sup>st</sup> Jun 2010- Present  
Responsibilities : Physical Education & Training to the Students upto Higher Secondary Level.  
: Coaching in Games and Athletic Events, Organizing Sports Meets in School Level

**Govt Higher Secondary School, Erumad, Nilgiris.**

Position Held : Teacher in Physical Education.  
Duration : 1<sup>st</sup> Jun 2010- Present  
Responsibilities : Physical Education & Training to the Students upto Higher Secondary Level.  
: Coaching in Games and Athletic Events, Organizing Sports Meets in School Level.

**Sullam Mussalam Teacher Education (Affiliated to University of Calicut) Areekode Malapuram Dist.**

Position Held : Teacher in Physical Education.  
Duration : 1<sup>st</sup> May 2010 – 31 May 2010  
Responsibilities : Physical Education & Training to the Teacher Education Students (B.Ed)

**Govt Model Higher Secondary School, Cheeral, Wayanad.**

Position Held : Teacher in Physical Education.  
Duration : 1<sup>st</sup> Jun 2008- 30<sup>th</sup> Aug 2008.  
Responsibilities : Physical Education & Training to the Students upto Higher Secondary Level.  
: Coaching in Games and Athletic Events, Organizing Sports Meets in School Level

**Sacred Heart Marticolation English Medium Higher Secondary School Kayyuni. Nilgiris.**

Position Held : Teacher in Physical Education.  
Duration : 1<sup>st</sup> Jun 2007- 30<sup>th</sup> May 2008.  
Responsibilities : Physical Education & Training to the Students upto Higher Secondary Level.  
: Coaching in Games and Athletic Events.  
: Organizing Sports Meets in School Level.

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## **ACADEMIC QUALIFICATION**

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- PhD. Research Scholar in Physical Education on Factor Structure of Analysis in University of Calicut - 2023.
- M.Phil – Master of Philosophy in Physical Education from University of Calicut – June 2012.
- M.P.Ed – Master in Physical Education completed from University of Calicut in June 2010.60%
- B.P.E (Bachelor of Physical Education from University of Calicut (August 2007 with 52%).
- Higher Secondary Course Certificate from Government of Tamil Nadu (March 2004) with 58 %.
- Secondary School Leaving Certificate from Government of Tamil Nadu (March 2002) with 51%.

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## **COMPUTER KNOWLEDGE**

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- Proficient in Microsoft Windows Operating System
- Microsoft Office Tools-MS-Word, Excel & Power Point,
- Internet & Email & Computer Hardware.

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## **SKILL SET**

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Games	:	Football, Hockey, Volleyball, Cricket, Badminton, Kho-Koh, Kabaddi, Softball, Basketball, Handball.
Athletics	:	Track and field Events.
Martial Arts	:	Karate (Black Belt), Yoga, Wrestling, Gymnastics.
Physical Status	:	Height 174/cm Weight 72 kg.

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## **SPORTS ACHIEVEMENTS**

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- CFFA Football Academy Technical Coordinator Dubai.2021-23.
- Participated in District Level Republic Day sports Football –Winner in 1999-2000
- Participated in Zonal Level Republic Day sports Football –Winner in 2000-01
- Participated in District Level –Bharathiar Day Games-Football Tournament (Winner)-2000-01 at Ooty-Nilgiris-TN
- Participated in State Level–Bharathiar Day Games-Football Tournament (Runner Up)2000-01 at Erode-TN.
- Participated in District Level –Bharathiar Day Games-Football Tournament (Runner Up)2003-04 at Devershola-Nilgiris-TN
- Participated in Calicut University Inter-Collegiate Football Tournament held in the year 2004,2005 and 2006
- Participated in Calicut University Inter-Collegiate Volleyball Tournament held in the year 2009 and 2010.

- Participated in Calicut University Inter-Collegiate Cross Country Championship (Third Place) in 2005 at WMO Arts & Science College Muttill-Wayanad.
- Participated and won prizes in Athletics like 800 meters Running,4x100 Relay in School Level and Collegiate Level
- Karate Black Belt from Alan Thilak Karate School International-Chennai.
- Passed Foot Referee Test Conducted By Kerala Football Federation (KFA) Malapuram Dt– Jan 2009

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### **TRAINING PROGRAMMES ATTENDED**

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- Disaster Risk Management certificate course passed in Nilgiris Dist Teacher Association. .
- Attending on National seminar and workshop at paper presentation on Health related topic's
- School Adolescence Training Programmer ( SATP) Organized by DIET Kotagiri Nilgiris.
- Physical Education Teacher In-services Course Organized by DIET Sultan Bathery.
- Yoga Training Organized by DIET Sultan Bathery.
- Yoga Therapy Theoretical approach certificate course passed on University of Calicut..
- First Aid and Basic Life support certificate course passed on MIMS Hospital Calicut
- Officiating in football tournaments in panchayath Sports Fests in Tamil Nadu.

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### **SPECIAL PROGRAMME'S CONDUCTED**

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- Organized UGC Aided National Seminar – on Health Fitness Well Being in Physical Education at Calicut University – March 2009
- Organized Workshop on First Aid & Basic Life Support in Association with MIMS – Hospital Calicut and Calicut University Physical Edn Dept – Dec 2009
- Organized All India University Women Cricket Tournament at Kerala Varma College Trichur –March 2009
- Conducted Seminars on Various Topics in PE at SNDP Higher Secondary School related to Research Proposal – Oct 2009
- Organized Special Football Coaching Camp for the Students of Govt Higher Secondary School Erumad – Jun 2010
- Conducted Training Programme in Yoga Therapy for Students of Sacred Heart Higher Secondary School Kayyuni – July 2010
- Organized Sevens Foot Ball Tournament related to Onam Celebration in association with Kanishka Sports Club Panamchira –Erumad - Aug 2010

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## **CULTURAL ACHIEVEMENTS**

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- Got prizes in Cultural Events like Light music, Recitation and Orchestra in School and College Levels.
- Proficient in Musical Instrument-Tabala. And worked as Office Bearer of Social Clubs.
- Active Member of Music Troops.
- Actively involved as an Announcer in Calicut University Interzone Arts Festivals and Sports Meets in 2005, 2006 & 2007.

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## **PERSONAL DETAILS**

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Date of Birth : 12<sup>th</sup> May 1986

Age : 36 Years.

Nationality : Indian

Gender : Male

Religion : Christian-Jacobite

Marital Status : Single

### **Languages known**

Speak : English, Malayalam, Tamil

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## **DECLARATION**

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I hereby declare that the information furnished above is true to the best of my knowledge.

Place : Erumad,  
Date : 25-11-2023.

**(Sariul Varghese)**

## ***Acknowledgement***

*Its my passion for sports and games that led me to do a course in Physical Education and the endorsement was my pursuing a PG Programme in Physical Education which is now materialized. I did not stop this since I wanted to study the problems and perils related to physical fitness among the youngsters of our country. The result was my decision to do a micro-level research in physical fitness programme.*

*In this unique venture I am deeply indebted to several good souls and institutions who have encouraged inspired and guided me all through this journey.*

*At the very out set I bow before the God Almighty who has showered his choicest blessings on completing this work. I cannot go further without acknowledging the great services, help and guidance of my respected supervisor Dr. K.P. Manoj, who has been instrumental in completing my research work. Without the incessant care and support of this scholar, I would not have been able to do justice to the micro level research work. I acknowledge his valuable guidance and support.*

*The faculty members of the Department of Physical Education were all kind and considerate enough to lead me and advise me, through the different phases of my study.*

*All through my life I was abundantly blessed by my father, (Late) Sri. M.K. Varghese, Rtd. Headmaster, and my mother Ms. Mary Varghese, my brother Sabu Varghese, and sister Ambili Varghese and brother in law Biju T.S. who were always pouring their guidance and blessings.*

*Lastly, but not least, I thankfully acknowledge the pains and sacrifice of my life partner Ms. Jincy Saril who has undertaken to run the family as a dedicated homemaker, when I was busily engaged in the work related to my research.*

*Before concluding, I have to acknowledge the loving care and encouragement given to me by Sri. Rashi Gazali, the Secretary and Managing Director of Nilgiri College of Arts and Science, Prof. T. Mohanbabu, Academic Dean, Nilgiri College of Arts and Science who has abundantly helped me in pursuing this research work. It was their motivation that became a force for me.*

*I conclude these words by saying that God has always poured his kindness and love on me and pray for more blessings from the Almighty.*

*Before concluding let me thankfully acknowledge the service extended to me by Ms. Indira G., Sports Officer of the government of Tamilnadu.*

*Sariul Varghese*

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**A CROSS SECTIONAL ANALYSIS OF SELECTED PHYSICAL  
FITNESS VARIABLES AND POSTURAL DEFORMITIES  
ACROSS AGE AND GENDER OF SCHOOL  
CHILDREN OF NILIGIRI DISTRICT**

**ABSTRACT**

The purpose of study was to analyze selected Physical fitness variables in relation to Postural deformities of boys and girls of high schools and higher secondary schools of Nilgiri district. The sub problem of the study was to construct norms on selected Physical fitness variables for boys and girls of high schools and higher secondary schools of Nilgiri district.

The subjects were 1200 boys and 1200 girls of High schools and Higher secondary schools of Government, Aided and Private schools of Nilgiri district and were categorized as boys and girls Under 14 years (300 + 300), Under 15 years (300 + 300), Under 16 years (300 + 300) and Under 17 years (300 + 300). The selected Postural deformities were Scoliosis, Kyphosis, Lordosis, Round shoulder, Bow leg, Knock knees ( all tested using the New York state posture test), Claw foot, Flat foot (all tested using the Foot print test). The selected Physical fitness variables and the tests used were (1) Speed (50 mts. Dash ( flying start) (2) Agility (4 x 10 mts Shuttle run), (3) Static balance (Stork stand test), (4) Dynamic balance (Johnson's modified bass test), (5) Movement time (Nelson's hand & arm reaction test), (6) Flexibility (trunk & back – Sit and reach test), (7) Ankle flexibility (Goniometer), (8) Abdominal strength (Sit-ups in one minute), (9) Coordination (8 figure duck test), (10) Endurance (Cooper's 8- minute run) , (11) Explosive power 1 (Vertical jump test) (12) Explosive power 2 (Standing broad jump) and (13) Reaction time (Nelson's hand reaction test)

Various descriptive profiling, t-ratio, two way ANOVA, Chi square and Factor analysis (principal component analysis) were done. Percentile norms were constructed on those prominent Physical fitness variables extracted after Factor analysis ( only on those items with loading greater than or equal to  $\pm 0.80$  of varimax solution ) on the eight groups of age and gender irrespective of the type of school. The level of significance was set at 0.05. Boys were found to have better Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time than girls irrespective of the age and type of school. Girls are having better Ankle flexibility than boys irrespective of the age and type of school. While no difference was found among boys and girls on Coordination irrespective of the age and type of school. Besides, significant difference were found among different age groups, different type of school groups on various selected Physical fitness variables selected for this study. No association was found between the selected eight Postural deformities such and the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years irrespective of the Gender and type of school, between boys and girls irrespective of the Age and type of school. No association was found between six of the selected eight Postural deformities such as Scoliosis, Kyphosis, Bow leg, Knock Knees, Claw foot and Flat foot and the three types of school, while association was found between two Postural deformities such as Lordosis and Round shoulder and the three types of school irrespective of the Age and Gender. Factor analysis of Under

14 year boys extracted the Abstro-Flexibility factor having seven Physical fitness variables accounting for 45.043% and the Reaction time factor having six Physical fitness variables accounting for 36.899% of the total common variance. For Under 14 year girls, the Balanco-Power factor having eleven Physical fitness variables accounting for 66.274%, the Coordination factor having a single Physical fitness variable accounting for 11.63% and the Speed factor having a single Physical fitness variable Speed accounting for 8.862% of the total common variance were extracted. For Under 15 year boys, the Agile factor having nine Physical fitness variables accounting for 50.01% and the Endurance factor having four Physical fitness variables accounting for 33.637% of the total common variance were extracted. For Under 15 year girls, the Movement-Abstro factor having eleven Physical fitness variables accounting for 66.274% and the Static balance factor having a single variable Static balance accounting for 11.634% of the total common variance were extracted. For Under 16 year boys, the Dynamic-Abstro factor having eleven Physical fitness variables accounting for 66.040% and the Speedo-Power factor having two Physical fitness variables accounting for 19.981% of the total common variances were extracted. For Under 16 year girls, the Abstro factor having eleven Physical fitness variables accounting for 65.611% and the Coordination-Power factor having two Physical fitness variables accounting for 25.888% of the total common variance were extracted. For Under 17 year boys, the Abstro 17B factor having ten Physical fitness variables accounting for 70.400%, the Static balance 17B factor having two Physical fitness variable accounting for 11.477% and the Endurance 17B factor having a single Physical fitness variable accounting for 8.883% of the total common variance were extracted. For Under 17 year girls, the Abstro 17G factor having twelve Physical fitness variables accounting for 77.689% and the Coordination 17G factor having a single Physical fitness variable accounting for 11.573% of the total common variance were extracted. Percentile norms were constructed on five identified prominent items such as Dynamic balance, Flexibility, Ankle flexibility, Abdominal strength, Coordination and Explosive Power 1 for the Under 14 year boys irrespective of the type of school. Likewise on eight identified prominent items for the Under 14 year girls such as Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power 1, Explosive power 2 and Reaction time. For the Under 15 year boys on four items such as Speed, Agility, Static Balance and Explosive power 1. For the Under 15 year girls on ten items such as Speed, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1 and Reaction time. For the Under 16 year boys on nine items such as Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance and Reaction time. For the Under 16 year girls on ten items such as Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive Power 1 and Reaction time. For the Under 17 year boys on ten items such as Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power 1, Explosive Power 2 and Reaction time. For the Under 17 year girls on eleven items such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive Power 1 and Reaction time.

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**സംഗ്രഹം**

നീലഗിരി ജില്ലയിലെ ഹൈസ്കൂളുകളിലെയും ഹയർസെക്കൻഡറി സ്കൂളുകളിലെയും ആൺകുട്ടികളുടെയും പെൺകുട്ടികളുടെയും ശാരീരിക വൈകല്യങ്ങളുമായി ബന്ധപ്പെട്ട് തിരഞ്ഞെടുത്ത ശാരീരിക ക്ഷമത വേരിയബിളുകൾ വിശകലനം ചെയ്യുക എന്നതായിരുന്നു പഠനത്തിന്റെ ലക്ഷ്യം. നീലഗിരി ജില്ലയിലെ ഹൈസ്കൂളുകളിലെയും ഹയർസെക്കൻഡറി സ്കൂളുകളിലെയും ആൺകുട്ടികൾക്കും പെൺകുട്ടികൾക്കുമായി തിരഞ്ഞെടുത്ത ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളിൽ മാനദണ്ഡങ്ങൾ നിർമ്മിക്കുക എന്നതായിരുന്നു പഠനത്തിന്റെ ഉപ പ്രദർശം.

നീലഗിരി ജില്ലയിലെ സർക്കാർ, എയ്ഡഡ്, പ്രൈവറ്റ് സ്കൂളുകളിലെ ഹൈസ്കൂളുകളിലെയും ഹയർ സെക്കൻഡറി സ്കൂളുകളിലെയും 1200 ആൺകുട്ടികളും 1200 പെൺകുട്ടികളുമാണ് വിഷയങ്ങൾ. 16 വയസ്സിന് താഴെയുള്ളവർ (300 + 300), 17 വയസ്സിന് താഴെയുള്ളവർ (300 + 300). സ്റ്റോളിയോസിസ്, കൈഫോസിസ്, ലോർഡോസിസ്, റൗണ്ട് ഷോൾഡർ, ബോ ലെഗ്, ക്ലോക്ക് ക്ലിസ് (എല്ലാം ന്യൂയോർക്ക് സ്റ്റേറ്റ് പോസ്ചർ ടെസ്റ്റ് ഉപയോഗിച്ച് പരീക്ഷിച്ചു), ക്ലോ ഫുട്ട്, ഫ്ലാറ്റ് ഫുട്ട് (എല്ലാം ഫുട്ട് പ്രിന്റ് ടെസ്റ്റ് ഉപയോഗിച്ച് പരീക്ഷിച്ചു). തിരഞ്ഞെടുത്ത ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളും ഉപയോഗിച്ച ടെസ്റ്റുകളും (1) സ്പീഡ് (50 മീറ്റർ, ഡാഷ് ( ഫ്ലയിംഗ് സ്റ്റാർട്ട്) (2) എജിലിറ്റി (4 x 10 മീറ്റർ ഷട്ടിൽ റൺ), (3) സ്റ്റാറ്റിക് ബാലൻസ് (സ്റ്റോർക്ക് സ്റ്റാൻഡ് ടെസ്റ്റ്), (4) ഡൈനാമിക് ബാലൻസ് (ജോൺസൺ പരിഷ്കരിച്ച ബാസ് ടെസ്റ്റ്), (5) മൂവ്മെന്റ് ടൈം (നെൽസന്റെ കൈയും കൈയും പ്രതികരണ പരിശോധന), (6) ഐക്ലിബിലിറ്റി (സിറ്റ് & റീച്ച് - ഇരുന്ന് എത്തിച്ചേരാനുള്ള പരിശോധന), (7) ആങ്കിൾ ഐക്ലിബിലിറ്റി (ഗോണിയോമീറ്റർ), (8) അബ്ഡോമിനൽ സ്റ്റ്രെംഗ്ത്ത് (ഒരു മിനിറ്റിൽ ഇരിക്കുക), (9) കോർഡിനേഷൻ (8 ഫിഗർ ഡക് ടെസ്റ്റ്), (10) എൻഡുറൻസ് (കൂപ്പറിന്റെ 8- മിനിറ്റ് ഓട്ടം) , (11) എക്സ്പോസിറ്റ് പവർ 1 (വെർട്ടിക്കൽ ജമ്പ് ടെസ്റ്റ്) (12) എക്സ്പോസിറ്റ് പവർ 2 (സ്റ്റാൻഡിംഗ് ബ്രോഡ് ജമ്പ്) കൂടാതെ (13) റിയാക്ഷൻ ടൈം (നെൽസന്റെ കൈ പ്രതികരണ പരിശോധന)

വിവിധ വിവരണാത്മക പ്രൊഫൈലിംഗ്, ടി-അനുപാതം, ടു വേ ANOVA, ചി സ്ക്വയർ, ഫാക്ടർ വിശകലനം (പ്രിൻസിപ്പൽ കോംപോണന്റ് അനാലിസിസ്) എന്നിവ നടത്തി. ഫാക്ടർ വിശകലനത്തിന് ശേഷം എക്സ്റ്റാക്റ്റുചെയ്ത പ്രമുഖ ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളിൽ (വാരിമാക്സ് സൊല്യൂഷനിലെ  $\pm 0.80$ -നേക്കാൾ കൂടുതലോ അതിന് തുല്യമോ ആയ ലോഡിംഗ് ഉള്ള ഇനങ്ങളിൽ മാത്രം) പ്രായവും ലിംഗഭേദവും ഉള്ള എട്ട് ഗ്രൂപ്പുകളിൽ സ്കൂൾ തരം പരിഗണിക്കാതെ പെർസെൻറൈൽ മാനദണ്ഡങ്ങൾ നിർമ്മിച്ചു. പ്രാധാന്യത്തിന്റെ അളവ് 0.05 ആയി സജ്ജീകരിച്ചു. സ്കൂളിന്റെ പ്രായവും തരവും പരിഗണിക്കാതെ ആൺകുട്ടികൾക്ക് മികച്ച സ്പീഡ്, എജിലിറ്റി, സ്റ്റാറ്റിക് ബാലൻസ്, ഡൈനാമിക് ബാലൻസ്, മൂവ്മെന്റ് ടൈം, ഐക്ലിബിലിറ്റി,



അബ്ലോമിനൽ സെംഗ്ത്ത്, എൻഡുറൻസ്, എക്സ്പോസിറ്റ് പവർ 1, എക്സ്പോസിറ്റ് പവർ 2, റിയാക്ഷൻ ടൈം എന്നിവ പെൺകുട്ടികളേക്കാൾ മികച്ചതായി കണ്ടെത്തി. പ്രായവും സ്കൂളിന്റെ തരവും പരിഗണിക്കാതെ പെൺകുട്ടികൾക്ക് ആൺകുട്ടികളേക്കാൾ മികച്ച ആങ്കിൾ ഫ്ലക്സിബിലിറ്റിയുണ്ട്. പ്രായവും സ്കൂളിന്റെ തരവും പരിഗണിക്കാതെ ഏകോപനത്തിൽ ആൺകുട്ടികൾക്കും പെൺകുട്ടികൾക്കും ഇടയിൽ വ്യത്യാസമൊന്നും കണ്ടെത്തിയില്ല. കൂടാതെ, ഈ പഠനത്തിനായി തിരഞ്ഞെടുത്ത വിവിധ തിരഞ്ഞെടുത്ത ശാരീരിക ക്ഷമത വേരിയബിളുകളിൽ വ്യത്യസ്ത പ്രായക്കാർക്കിടയിലും വ്യത്യസ്ത തരം സ്കൂൾ ഗ്രൂപ്പുകൾക്കിടയിലും കാര്യമായ വ്യത്യാസം കണ്ടെത്തി. തിരഞ്ഞെടുത്ത എട്ട് അംഗവൈകല്യങ്ങൾ, 14 വയസ്സിന് താഴെ, 15 വയസ്സിന് താഴെ, 16 വയസ്സിന് താഴെ, 17 വയസ്സിന് താഴെ എന്നിങ്ങനെ നാല് പ്രായ വിഭാഗങ്ങൾ തമ്മിൽ പ്രായഭേദമന്യേ ആൺകുട്ടികളും പെൺകുട്ടികളും തമ്മിൽ യാതൊരു ബന്ധവും കണ്ടെത്തിയില്ല. കൂടാതെ സ്കൂൾ തരം. സ്റ്റോളിയോസിസ്, കൈഫോസിസ്, ബോ ലെഗ്, ക്ലോക്ക് ക്ലിസ്, ക്ലാവ് ഫുട്ട്, ഫ്ലാറ്റ് ഫുട്ട് എന്നിങ്ങനെ തിരഞ്ഞെടുത്ത എട്ട് പോസ്ചറൽ വൈകല്യങ്ങളിൽ ആറൊണ്ണവും മൂന്ന് തരം സ്കൂളുകളും തമ്മിൽ ബന്ധമൊന്നും കണ്ടെത്തിയില്ല, അതേസമയം ലോർഡോസിസ്, റൗണ്ട് ഷോൾഡർ തുടങ്ങിയ രണ്ട് പോസ്ചറൽ വൈകല്യങ്ങൾ തമ്മിൽ ബന്ധം കണ്ടെത്തി. പ്രായവും ലിംഗഭേദവും പരിഗണിക്കാതെ മൂന്ന് തരം സ്കൂളുകളും. 14 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികളുടെ ഫാക്ടർ വിശകലനം ഏഴ് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള അബ്സ്ട്രോ-ഫ്ലക്സിബിലിറ്റി ഫാക്ടർ എക്സ്ട്രാക്റ്റുചെയ്തു, ഇത് 45.043% ആണ്. 14 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക്, പതിനൊന്ന് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള ബാലൻസ്-പവർ ഫാക്ടർ 66.274%, ഏകോപന ഘടകം 11.63%, ഒരൊറ്റ ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുള്ള സ്പീഡ് ഫാക്ടർ 8.862%. മൊത്തം പൊതുവായ വ്യതിയാനം വേർതിരിച്ചെടുത്തു. 15 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക്, 50.01% വരുന്ന ഒമ്പത് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള എജെൽ ഫാക്ടറും മൊത്തം പൊതുവായ വ്യതിയാനത്തിന്റെ 33.637% വരുന്ന നാല് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള എൻഡുറൻസ് ഫാക്ടറും എക്സ്ട്രാക്റ്റുചെയ്തു. 15 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക്, പതിനൊന്ന് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള മൂവ്മെന്റ്-അബ്സ്ട്രോ ഫാക്ടർ 66.274% ഉം സ്റ്റാറ്റിക് ബാലൻസ് ഫാക്ടർ മൊത്തം പൊതു വേരിയബിളിന്റെ 11.634% ഒറ്റ വേരിയബിൾ സ്റ്റാറ്റിക് ബാലൻസ് അക്കൗണ്ടും എക്സ്ട്രാക്റ്റുചെയ്തു. 16 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക്, പതിനൊന്ന് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള ഡൈനാമിക്-അബ്സ്ട്രോ ഫാക്ടർ 66.040% ഉം സ്പീഡോ-പവർ ഫാക്ടറും രണ്ട് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള മൊത്തം പൊതുവായ വ്യതിയാനങ്ങളുടെ 19.981% എക്സ്ട്രാക്റ്റുചെയ്തു. 16 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക്, പതിനൊന്ന് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള അബ്സ്ട്രോ ഫാക്ടർ 65.611% ഉം കോഓർഡിനേഷൻ-പവർ ഫാക്ടറും രണ്ട് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള മൊത്തം പൊതുവായ വ്യതിയാനത്തിന്റെ 25.888% എക്സ്ട്രാക്റ്റു ചെയ്തു. 17 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക്, പത്ത് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള അബ്സ്ട്രോ 17 ബി ഫാക്ടർ 70.400%, സ്റ്റാറ്റിക് ബാലൻസ് 17 ബി ഫാക്ടർ രണ്ട് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളും 11.477% എൻഡുറൻസ് 17 ബി ഫാക്ടറും 883% ഒരൊറ്റ ഫിസിക്കൽ ഫിറ്റ്നസ് ഉള്ള എൻഡുറൻസ് 17 ബി ഫാക്ടർ. മൊത്തം പൊതുവായ വ്യതിയാനം വേർതിരിച്ചെടുത്തു. 17 വയസ്സിന് താഴെയുള്ള

പെൺകുട്ടികൾക്ക്, 77.689% വരുന്ന പന്ത്രണ്ട് ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുകളുള്ള അബ്സ്റ്റ്യാ 17G ഫാക്ടറും മൊത്തം പൊതു വേരിയൻസിന്റെ 11.573% ഒരു ഫിസിക്കൽ ഫിറ്റ്നസ് വേരിയബിളുള്ള കോർഡിനേഷൻ 17G ഫാക്ടറും എക്സ്ട്രാക്റ്റ് ചെയ്തു. 14 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്കായി സ്കൂളിന്റെ തരം പരിഗണിക്കാതെ ഡൈനാമിക് ബാലൻസ്, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, കോഡിനേഷൻ, എക്സ്ക്ലോസീവ് പവർ 1 എന്നിങ്ങനെ അഞ്ച് പ്രമുഖ ഇനങ്ങളിൽ പെർസെൻറേജ് മാന്ദര്യങ്ങൾ നിർമ്മിച്ചു. അതുപോലെ 14 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്കായി ഡൈനാമിക് ബാലൻസ്, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, എക്സ്ക്ലോസീവ് പവർ 1, എക്സ്ക്ലോസീവ് പവർ 2, റിയാക്ഷൻ ടൈം എന്നിങ്ങനെ എട്ട് പ്രമുഖ ഇനങ്ങളിൽ. 15 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക് സ്പീഡ്, എജിലിറ്റി, സ്റ്റാറ്റിക് ബാലൻസ്, എക്സ്ക്ലോസീവ് പവർ എന്നിങ്ങനെ നാല് ഇനങ്ങളിൽ 1. 15 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക് സ്പീഡ്, ഡൈനാമിക് ബാലൻസ്, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, കോഡിനേഷൻ എന്നിങ്ങനെ പത്ത് ഇനങ്ങളിൽ, എൻഡുറൻസ്, എക്സ്ക്ലോസീവ് പവർ 1, റിയാക്ഷൻ ടൈം. 16 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക് സ്റ്റാറ്റിക് ബാലൻസ്, ഡൈനാമിക് ബാലൻസ്, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, കോർഡിനേഷൻ, എൻഡുറൻസ്, റിയാക്ഷൻ ടൈം എന്നിങ്ങനെ ഒമ്പത് ഇനങ്ങളിൽ. 16 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക് സ്പീഡ്, എജിലിറ്റി, ഏകോപനം, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, എൻഡുറൻസ്, എക്സ്ക്ലോസീവ് പവർ 1, റിയാക്ഷൻ ടൈം എന്നിങ്ങനെ പത്ത് ഇനങ്ങളിൽ. 17 വയസ്സിന് താഴെയുള്ള ആൺകുട്ടികൾക്ക് സ്പീഡ്, എജിലിറ്റി, ഡൈനാമിക് ബാലൻസ്, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, എക്സ്ക്ലോസീവ് പവർ 1, എക്സ്ക്ലോസീവ് പവർ 2, റിയാക്ഷൻ ടൈം എന്നിങ്ങനെ പത്ത് ഇനങ്ങളിൽ. 17 വയസ്സിന് താഴെയുള്ള പെൺകുട്ടികൾക്ക് സ്പീഡ്, എജിലിറ്റി, സ്റ്റാറ്റിക് ബാലൻസ്, ഡൈനാമിക് ബാലൻസ്, മുവ്മെന്റ് ടൈം, ഹെക്സിബിലിറ്റി, ആങ്കിൾ ഫ്ലക്സിബിലിറ്റി, അബ്ഡോമിനൽ സ്റ്റ്രെങ്ത്, എൻഡുറൻസ്, എക്സ്ക്ലോസീവ് പവർ 1, റിയാക്ഷൻ ടൈം എന്നിങ്ങനെ പതിനൊന്ന് ഇനങ്ങളിൽ.

# Chapter I

## **Introduction**

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## **1.1 Introduction**

There is evidence of play in the ancient civilization. The so-called 'primitive' societies which survive today around the world often have elaborate and distinctive form of play. Some aspect of formal play and recreation has developed into an international game / sport of high finance and commercialization. At the same time, opportunities for ordinary citizen, to take part in sporting activities have expanded at an unprecedented rate. Critical to this development of modern sport/ games, there of course, important but gradual change in play and recreation was there over the preceding centuries.

Sports is, above all a competitive activity and cannot be thought of without competition, as without competitions, sports become simply play or recreation. Play can at time be sport and is never simply play, as the competitive aspect is essential to the nature of sport. Hence, sport is an institutional competitive activity that involves physical exertion or the use of relatively complex skills by an individual whose participation is motivated by a combination of intrinsic satisfaction associated with the activity itself and the rewards earned through participation or victories.

Webster's sports dictionary defines 'sport as a recreational or competitive activity which involves degree of physical exertion or which requires skill in the playing of an object for scoring. It is no longer the pursuit of only physical excellence, but has also developed into a high-profile psychological factor over the last quarter of a century and particularly in the preceding two decades. It has been realized that a player or sports person is not exempted from psychological 'fine tuning as it were to reach a certain level of achievement.

The time, energy and space that are expended on sports / games throughout the world each year seen to have no limit. This explosion of popular interest in sports / games and fitness is likely to continue in the coming decades. The past decades have been the rise of an area of study called futurists or futuristic which attempts to scientifically examine the future. In sport, scientists have tried to predict the success of the players during competitions. The prediction is usually based on anthropometric measurement, physical, physiological and psychological traits of players.

It is essential to know how a child can throw a spear, how to jump and playing with peer groups, as these will automatically educate the children. Nature is an ultimate teacher similarly natural physical activities improves instinct of the child and dramatically changes the social life of the child which are later carried on to adolescence and to adulthood (Tiwari *et al.*, 2007).

Physical activity do provides an opportunity to get membership of society, as a member of a group, as a spectator, as a fan and part of a team, it is important to get the best leisure time partner through physical activity and sports. The pleasure to participate in physical activities, the happiness and health an individual receive at various stages of life do differ like child playing for recreation, youths or adolescents participating in activities for health, fitness, so as to develop skill related activities. Whereas, the elderly people join the same group for doing physical activities to maintain health and wellness. An important value of sports and physical activities is to get good opportunities in one's life. An individual find his/ her strength and weakness and also his/ her own abilities. Another important factor on sports and physical activities are it never end because when an individual win, he /she keep continuously involve in that activity to carry the success as long as possible. On the other hand, when people lose the game they will further plan to do special activities to become victorious and feel satisfaction through movement (Amelia *et al.*, 2008).

During the ancient period, people did hunting, labor, climbing and jumping activities are common for their existence in nature, hence these activities naturally improved their fitness, health and had lengthy life span. There is a huge difference in physical fitness, mental toughness, health and fruitful utilization of the leisure time

between past and present generations, this is because most of the children tend to spend maximum leisure time using smart phones, computer, watching television, and playing computer games. Many researches has reported an increasing percentage of children having motor problems and it has been linked to difficulties some children have with reading and writing. Its shows physical activities and sport to be made compulsory in schools because children spend abundant time in school, which is the place to attract the students towards physical activities for the development of a sports culture. It need to be seen that, the physical stimulation they receive in school is very valuable as they develop positive experiences with physical activities at school (Verijiken, 2007).

Modern generation had the problem of shortage of neighborhood recreational spaces which leads to decrease in the level of individual's satisfaction and higher level of obesity connected with lower overall health and wellbeing. In rural areas neighborhood recreational spaces is less in percentage when compared with urban and metropolitan cities. Genetics and hereditary character from parents, also play a ruling for determining the health status of individuals and populations. This includes both the tendency for certain diseases and certain health conditions, apart from habits and behaviors individuals develop through lifestyle (Menra, 2013).

School is a place where students are influenced strongly and a place for achievements physically and academically, especially in a good school atmosphere, with active and cooperative staff and teachers which ultimately will produce good society friendly students. But, on the other hand, at present, all school monitoring system and authorities asks the teachers to have more involvement of students in academics than sports and co-curricular activities (Feldman *et al.*, 2004).

Regular participation in physical activity predominantly enhances physical fitness which do influence the health of an individual. Regular physical activity can reduce the risk of lifestyle diseases like hypertension, diabetes, colon cancer, heart diseases etc. Participation in physical activities also helps in reducing psychosomatic disorders which reduces depression and anxiety, improves the mood, mould the

personality of an individual and improve the ability to perform daily task (U.S. department of health and human services, 1996). (Winnick, 2005).

An important benefit of regular physical activity that demonstrate the importance of physical fitness is the absence of ailment. If an individual is not suffering from any perceptible disease, then he /she is considered to be physically fit. Another significant issue is whether there is a universal condition of physical fitness which is uniformly applicable to all. It is not so. Physical fitness of young people is different from that of the aged. The physical fitness of a sports person is different from that of the persons working in army factory or a layman. In fact, physical fitness means different things to different people, as physical fitness has been defined as the capacity of a person to carry out the daily activities without undue fatigue. Physical fitness can be classified to two categories: Health-related and Motor-related. The Health-related components of physical fitness are of great importance because they make an individual fit, functional and productive for everyday living.

Physical activity is good for the heart, body and mind. Regular physical activity will prevent and help manage heart disease, type-2 diabetes, and cancer which cause nearly three quarters of deaths worldwide. Physical activity do reduce symptoms of depression and anxiety, and enhance thinking, learning, and overall well-being. Any amount of physical activity is better than none, and more is better. For health and wellbeing, WHO recommends at least 150 to 300 minutes of moderate aerobic activity per week (or the equivalent vigorous activity) for all adults, and an average of 60 minutes of moderate aerobic physical activity per day for children and adolescents. All physical activity counts and hence can be done as part of work, sport, leisure or transport (walking, wheeling and cycling), or every day household tasks.

Muscle strengthening benefits everyone. Older adults (aged 65 years and older) should add physical activities which emphasize balance and coordination, as well as muscle strengthening, to help prevent falls and improve health. Too much sedentary behavior is unhealthy and can increase the risk of heart disease, cancer, and type-2 diabetes. Limiting sedentary time and being physically active is good for

health, everyone will benefit from increasing physical activity and reducing sedentary behavior, including pregnant and postpartum women and people living with chronic conditions or disability (WHO, 2020)

Living a healthy lifestyle involves activities that are beneficial to health. Fitness means making good eating choices, not putting or taking toxins into the body and most importantly staying active. In a fast paced world, there is little or no time for oneself. Making fitness a priority like going to the gym, playing with the kids, playing a recreational game / sport, or even gardening in the yard are all a part of staying active and involving in fitness for life. Instead of sitting down and watching television should be discouraged and instead taking a walk or jogging outdoors and should take advantage of all such activities one can enjoy. Eating healthy goes hand in hand with fitness and should fuel the body properly to get the energy required to stay active. Everyone should make it a point to add fitness workouts in the daily schedule and watch how the mood enhances, energy increase, and health reaching great heights.

In order to be healthy and to be physically fit. Indian parents have recently started to divert their focus toward co-curricular activities by giving much importance to Physical Education. As the rise of cognitive and physical skills has taken place in the outer world, parents have realized the importance of additional activities apart from Education. Physical Education has become an essential part of student's school life considering the change in their lifestyle. With the increasing screen time, intake of junk food and involving in non-academic activities have taken students to focus less on their health. This is where Physical Education in India becomes more important and plays an important role in keeping students active and their bodies moving, helping to sharpen the mind and to develop confidence. To put it simply, physical activity and exercise is important for everyone of all ages such as children, adolescents and adults. Physical activity promotes good health and everyone should stay active throughout all stages of ones life regardless of the body type or BMI. Understanding the benefits of physical fitness and knowing how active one should be can help an individual to maintain good health and improve the overall quality of life.



Physical fitness is considered as a measure of the body's ability to function efficiently and effectively during work and leisure activities. In order to remain physically fit and healthy, an individual need to engage oneself in physical activities and take measures to be physically fit. Physical fitness is an important area of discussion especially in the light of the increase in the number of children becoming obese. Normal physical activities, which were done in earlier times both at home and outside as part of day-to-day routine have reduced due to tremendous development of science and technology. The work that was done manually is now being carried out by machines. The use of automated equipment such as automatic machines, remotes, mobiles and changes in lifestyles had affected health and physical fitness and has become a matter of deep concern to all.

Physical fitness is the very basis of one's daily life and a sick nation cannot produce healthy attitudes and cannot be economically very productive. Intelligence and skill can only function at the peak of their capacity, when the body is healthy and strong. The development or maintenance of skills related to strength, agility, flexibility, movement, endurance, including dance and the development of knowledge and skills regarding teamwork, fair play, nutrition and physical fitness should be made a daily routine as part of a healthy lifestyle. The goal of Physical Education is to develop physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful living.

Fitness is a broad term that means something different to each person, but it refers to an individual's optimal health and overall well-being. Being fit not only means physical health, but emotional and mental health, too. It defines every aspect of an individual's health and is very much related to smart eating and active living which are fundamental to fitness. Physical fitness training can be split into four major components allowing for the diversity of training necessary to accomplish mission tasks: Endurance, Mobility, Strength, Balance and Flexibility. Endurance is the body's ability to continually accomplish the same task in a repetitive fashion, Mobility is the ability to move the body in space with the precision necessary to negotiate an obstacle. Strength is the ability to generate force attempting to overcome resistance.

Balance can be static or Dynamic. Finally, flexibility is possessing the optimal range of motion which is required to do specific works and for doing daily routine works. All five aspects of physical fitness are important and essential in creating a physically well-balanced, injury-resistant, and healthy living.

Maintaining a good level of physical fitness is something that everyone should aspire for. But it can be difficult to determine what fitness entails. Hence a question arises: What does physically fit mean? According to the United States Department of Health and Human Services, physical fitness is defined as “a set of attributes that people have or achieve that relates to the ability to perform physical activity.

“This description goes beyond being able to run fast or lift heavy weights. Despite being important, these attributes only address single areas of fitness and this article provides details of the five main components of physical fitness.

Physical fitness is a natural by product of daily living and a prime necessity especially in this technological age to get the utmost of the life and thereby enabling to live more and serve the world better. One should have good physical fitness having qualities like quick reaction time, speedy movements accompanied by a great deal of dodging, quick turn and confidence. Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities, generally achieved through proper nutrition, moderate- vigorous physical exercise, and sufficient rest. Fitness keep an individual’s heart, lungs, and circulatory system healthy, so as to improve the overall fitness. Fitness is important not only for medical reasons, but also for mental health reasons and for overall quality of life. Being physically fit not only brings the benefit of fewer health problems in future, but also the maintenance of physical fitness is stress relieving and helps to sleep better at night. Fitness experts and those who make physical activity part of their daily routine will say if an individual want to feel better, have more energy, and even add years to one’s life have to just do exercise daily as a routine of life.

Fitness is composed of many complex factors for which compete evaluation cannot be done by testing a single factor. Many variables, such as those included in

measuring Strength, Balance, Flexibility, cardio-respiratory endurance, coordination, etc., reflect in a special way some aspect of total physical fitness.

Fitness can include muscular endurance, which is the ability of a muscle to continue exerting force without getting tired. Strength training builds bigger muscles. Endurance training does not necessarily generate muscles of larger size, but focuses more on the cardio-vascular system, ensuring that the muscles receive the oxygenated blood they need to keep functioning. Another important factor of muscles is that, for specific training for endurance do concerns on the type of muscle fibre – fast twitch or slow twitch fibre.

A comprehensive fitness program tailored to an individual typically focuses on the development of one or more specific qualities based on age or Health-related needs. Many sources also cite physical, mental, social and emotional health as important domains of overall fitness and is often presented in textbooks as a triangle made up of three points, which represent physical, mental and social fitness. Physical fitness can also prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging. Work outs for fitness will also help people to sleep better and possibly alleviate some mood disorders in certain individuals.

Fitness is the ability to live a full and balanced life and hence a totally fit person has a healthy and happy outlook towards life. Fitness should be a youth's absolute necessity which breeds self-reliance and keeps an individual mentally alert. Physical fitness is essential for human beings to adjust well with his/ her environment as his / her mind and body will be in complete harmony. It is generally agreed that physical fitness is an important part of the normal growth and development of a child, a generic definition regarding the precise nature of physical fitness has not been universally accepted. Through research and scholarly inquiry, it is clear that the multi-dimensional characteristics of physical fitness can be classified as two: Health- related physical fitness and Skill- related physical fitness.

General fitness implies the ability of a person to live most effectively with his / her potentials, which depend upon the physical, mental, social and emotional components of fitness which are highly interrelated. The primary components of

physical fitness identified by the president's council on physical fitness and sports were Muscular strength, Muscular endurance and Cardio- respiratory endurance. However, later the president council also included some other motor performance components namely Agility, Speed, Flexibility and Balance in physical fitness. It is important to mention here that some experts (e.g. Clarke and Clarke, 1987; AAHPERD, 1980, 1984) call such fitness tests which include the measurement of percentage body fat, as Health-related physical fitness tests. The wise men of all ages and races, white, brown, yellow, and black, civilized or barbarians, savages, back to the cave men, made use of the power of mind over body. As one advances with training, one will find mind as the most important aspect to be trained (Kansal, 1996).

Physical fitness is the ability to perform physical work, training, and other activities throughout the daily work schedule, which is multi-dimensional, and based on goals. Some components are more valuable than others. The five key components which defines Physical fitness are:-

- Cardio-respiratory endurance—how efficiently the body delivers oxygen and nutrients for muscular activity and transports waste from the cells.
- Muscular strength—the greatest amount of force the muscle or muscle groups can exert in a single effort.
- Muscular endurance—the ability of the muscle or muscle group to perform repeated movements for considerable /extended period of time.
- Flexibility—the ability to move joints and muscles or through their entire normal range of motion
- Body composition- is the amount of body fat an individual have in comparison with total body mass.

Improving the first three of these components will improve the body composition by decreasing body fat.

Excessive body fat detracts from the other fitness measures, reduces physical and mental performance, detracts from appearance, and increases overall health risks. One measurement of body fat is as a percentage of the total body weight. Apart from physical fitness, one should also work to improve motor fitness like Speed, Agility, Muscle power, Eye-hand coordination and Eye-foot coordination. Appropriate training will improve these elements to an individual's potential. The goal of fitness programs should be to improve physical and motor fitness through sound, progressive, mission-specific physical training.

Physical fitness is to the human body what fine tuning is to an engine. It enables to perform up to one's potential and can be described as a condition that helps to look, feel and to do the best. Physical fitness involves the performance of the heart, lungs and the muscles of the body, besides influencing to some degree qualities such as mental alertness and emotional stability.

The effect of strength is easily demonstrable through the feats of performance by overcoming higher degree of resistance. According to Barrow and McGee Strength in a pre-requisite to all activities since it takes a certain amount to be agile, to have power and to run fast. Thus, leg strength seems to be a determining factor to success in jumping. One cannot hope to achieve success in jumping without muscular strength necessary to move the leg forward with speed. Further, a jumper needs more of Explosive power and less Endurance than middle and long distance runners.

Kruczalak quotes several authors to show the limited correlation between Strength and Speed and even against heavy weight training, which is controversial in nature and contrary to the present accepted theories.

Exercise or lack of fitness affects both physical and mental health. Exercise improves strength, endurance, healthy bones, muscles, control weight, reduce anxiety, stress and increases self confidence. Inactive life when carried to adulthood, it leads to lifestyle diseases (Center for disease control and prevention (CDC), 2000, National Institutes of Health (NIH) consensus development panel on physical activity and cardiovascular health, 1996). Normally youths feel good while participating in exercise and sports than idle people, active people are found to be more confident, and

spend more time with friends and they use sports and games to become socialized. (Feldman, 2004).

Posture is a health indicator of an individual. Generally, school-going children are not conscious about their health and due to their practices unknowingly they develop certain deformities with regard to their posture. 'Walk tall' is a generally used terminology to keep up one's good posture. Postural deformities might have developed due to physical inactivity, wrong sitting or walking, sometimes due to work pressure, social environment, peer mischief, obesity etc.

Posture can be described as a stature in which the head is held erect, the chest forward, the shoulders drawn back and the abdomen retracted. Posture involves the alignment of parts of the body to achieve balance while sitting, standing, walking or while doing physical activity. The bony skeleton and muscle govern the balance, which varies with age, occupation and type of activity, physique and health.

Posture means position of a multi-segmented organism and as such the human body, cannot be said to have a single posture. Posture is an index of health and where postural improvement seems desirable, consider first the factor, which makes a person feel like standing, walking or sitting the way he/ she is habituated. One should be mindful of one's posture during everyday activities, like watching television, washing dishes, or walking. All kinds of exercise help to improve posture, but certain types of exercises can be especially helpful, which include yoga, tai chi, and other classes that focus specifically on body awareness. Exercises should be done regularly to strengthen the core (muscles around the back, abdomen, and pelvis). Maintenance of a healthy weight is very important for maintaining a good posture as extra weight can weaken the abdominal muscles, causing problems to the pelvis and spine, which will contribute to low back pain. Hence, all of these will adversely affect the posture. Always wear comfortable, low-heeled shoes as high heels will throw off balance and force an individual to walk differently, thereby exerting more stress on the muscles which ultimately harm the posture. Always make sure that work surfaces are at comfortable height for an individual whether it is sitting in front of a computer, cooking, reading newspaper or eating.

Good posture is a signature of an individual's physical freedom and do represents an exclusive style and personality, entirely different from all others. Good posture also do uphold physical expressions in different kind of situations. Individual emotions fixed in the body are recognized by the people differently in different individuals. Initially, the emotions of babies are conveyed through their body, gradually they learn how to utilize other modalities such as speech to express their emotions. However, emotions are stored in the body (Sinha, 2011).)14C

Good posture is more than standing up straight so as to look the best and is an important part of long-term health of all homosapiens. All individuals should make sure that one should hold the body the right way, moving or at rest, so as to prevent pain, injuries, and other health problems. Posture is the position in which one hold the body and limbs when standing, sitting or lying down and to have good posture means that one need to be aware of always holding oneself in a way that puts the least strain on the back, irrespective of what an individual is doing.

Sustaining a good posture is a big part of one's health which ensures that the bones are well aligned with the rest of the body. Like the tension in the muscles and ligaments are properly distributed, so as to keep the body parts in their rightful positions with minimal stress. Posture is the position in which one hold the body upright against gravity while standing, sitting, or lying down, which require good muscle flexibility. normal motion of the joints and a balance of muscles on both sides of the spine.

Posture can be "active or inactive". Inactive postures are adopted for resting, sleeping or for general relaxation, for which, the essential muscular activity required to maintain life is reduced to minimum. Active posture require an integrated action of many muscles to maintain a posture and these may be either "static or dynamic". A static posture is maintained by the interaction of a group of muscles which work more or less statically to stabilize the joints, and in opposition to gravity or other forces. Whereas, a dynamic posture is required to form an efficient basis for a movement, and the pattern of posture is constantly modified and adjusted to meet the changing circumstances which arise as a result of the said movement.

Good posture involves training the body to stand, walk, sit or lie in positions where the least strain is placed on supporting muscles and ligaments during movement or weight-bearing activities. If at any point of time while doing any movements causes an increase of back pain or spreading of pain to the legs, do not continue the activity and seek the advice of a doctor or physical therapist.

The key to good posture is the position of the spine which has three natural curves – at the neck, mid/upper back and lower back. Correct posture should maintain these curves, but should under no circumstances increase them. The head should be above the shoulders, and the top of the shoulder should be over the hips.)

Poor posture can be identified in children and adolescence due to the over use of television, video games, over use of smart phones, junk food, neglect of exercise leads to obesity in children hence noticeable childhood obesity has increased in the past decade (Stroebe *et al.*, 2000).

Posture is unique and no two individuals will have the same postures, even though some looks very similar. Posture is connected with the size and structure of bones and arrangements of the bony landmarks. Diseases, injury, Static and Dynamic behavior and psychological status of an individual are root causes of postural deformities. Posture is very important for various sports, games and physical activities. Teachers and coaches should understand the importance of posture in sports and should make it advantageous in many sports. Poor posture do effect to get early fatigue, muscular tension, poor muscle tone, pain, lesser self esteem and self confidence (Bloomfield, 2009).

All educational institutions must provide good and hygienic environment to children and all the teachers should make sure that, some sort of accountability should be there towards creation of a healthy environment in schools during every stage of activity connected with the health status of the students.

The Physical Education department should constantly attempt to seek co-operation of all other department of the institution in establishing genuine facilities for ensuring sound health among the students throughout the academic year. The



management of postural deformities of children at schools is a good sign of having a quality Physical Education program which authentically motivate the students also (Sinha, 2011).

In the twenty first century postural deformities has become common among the children and adolescents. Physical Education plays a vital role in the detection and remediation of postural abnormalities in schools and it is the Physical Education teachers who can educate the students on their body segments and deviations of their body. But, unluckily the postural tests and consequence of remediation in schools are ignored in many programs of Physical Education.

Postural deviations and thereafter deformities will result from any one or a combination of factors such as genetics, unawareness, environmental conditions, physical or growth abnormality or psychological factors. Children does not know what is normal or abnormal posture and its causes. Students who have poor body image lack confidence in their activities and tend to display defective postures that are characterized by poor body alignment (Winnick, 2005).

Many researchers concluded that, there is relationship between incidence o Scoliosis with seating arrangements which can be corrected through corrective physical training. Many doctors and experts reveal that, Scoliosis and Round shoulders are common in school going children and it is an established fact that, faulty furniture as a strong reason for causing postural deformities of the spine like Kyphosis, Scoliosis and Lordosis along with eye sight problems found among school going students. (Sharma, 2005).

Students who have mild postural deviations are very common and it can often be corrected through appropriate physical instructions and workouts during Physical Education programmes. It is predicted that 70% of all students have mild postural deviations and 5% have serious ones. The occurrence of serious postural deviations is unlikely and much greater among students with disabilities (Winnick, 2005).

Adolescence is the transitional period between childhood and adulthood, marked by a progress to the sexual maturity. Adolescence is a social construction and

was not properly identified before the twentieth century. Now, puberty sets in earlier than before, the entry into vocation / job tends to occur later, since complex societies require longer periods of Education or vocational training before a young person can take on adult responsibilities (Feldman, 2004).

School is a place for getting great physical experience for children and adolescents through learning skills, participation in sports and cultural activities, so as to mould the body and mind and to find friends which will widen the intellectual and social horizons (Feldman, 2004).

Adolescence the stage between childhood and adulthood, is a critical period which changes a lot in the sexual, physiological and physical maturities striving for independence, so as to move towards adulthood. The period of adolescence is fairly long, beginning just before the teenage and ending just after that. Adolescence period gets rapid physical changes, intellectual, cognitive and social changes which ultimately affect an individual for the rest of his/ her life (Feldman, 2004).

The students having postural deformities could be rectified when the age is between 14 to 17 years, through proper training and exercises. The more time the student fails to know his/ her postural deformity (in case they have) the chance of rectifying his/her deformity is less. As the age passes, the Physical fitness level of different components will be reduced and hence it will be harder and sometimes impossible for the students to correct and rectify the deformity they have.

Nilgiri district is known for its geographical position and its geographical features, which is basically hilly, lying at an altitude of 1000 to 2600 meters above sea level. The people have good physical fitness by birth and are adapted to less oxygen level, which helps them to work hard with less oxygen.

Although numerous researches have been conducted on health, Physical fitness and Postural deformities of school going children, yet no proper and scientific research has been focused on Physical Fitness and Postural deformities of school children of Nilgiri district. Besides, since, the school children of age between 14 and 17 of both genders are not having Physical fitness norms, this also has prompted the

scholar to undertake this study. The study was to survey the number of students with postural deformities in schools of Nilgiri district, which do have Government, Aided and Private schools.

## **1.2 Objectives of the study**

The objectives of the study are as follows: -

1. To diagnose postural deformities among boys and girls of high schools and higher secondary schools of age between 14 and 17 years of Nilgiri district.
2. To find the difference on various Physical fitness components of different age groups between 14 and 17 years irrespective of gender and type of school of Nilgiri district.
3. To find the difference on various Physical fitness components of boys and girls irrespective of age and type of school of Nilgiri district.
4. To find the difference on various Physical fitness components of boys and girls across different types of schools irrespective of age and gender of Nilgiri district.
5. To diagnose the strength and weakness of boys and girls on Physical fitness of high schools and higher secondary schools of Nilgiri district.
6. To find the association of Postural deformities to Physical fitness components of the school going children of age between 14 and 17 years of Nilgiri district.
7. To identify those components of physical fitness which are prominent among boys and girls of age between 14 to 17 years of Nilgiri district.
8. To develop norms for those prominent Physical fitness components among school going children of age between 14 to 17 years of Nilgiri district.

## **1.3 Research questions**

1. Whether postural deformities exists among boys and girls of high schools and higher secondary schools of age between 14 and 17 years of Nilgiri district.

2. Whether any difference do exist on various Physical fitness components of different age groups between 14 and 17 years irrespective of gender and type of school of Nilgiri district.
3. Whether any difference do exists on various Physical fitness components of boys and girls irrespective of age and type of school of Nilgiri district.
4. Whether any difference do exists on various Physical fitness components of boys and girls across different types of schools irrespective of age and gender of Nilgiri district.
5. Whether boys and girls do have any strength and weakness on Physical fitness of high schools and higher secondary schools of Nilgiri district.
6. Whether any association do exist among Postural deformities and Physical fitness components of the school going children of age between 14 and 17 years of Nilgiri district.
7. Whether there exists any prominent factors on physical fitness among boys and girls of age between 14 to 17 years of Nilgiri district.

#### **1.4 Statement of the Problem**

The purpose of study was to analyze selected Physical fitness variables in relation to Postural deformities of boys and girls of high schools and higher secondary schools' students of Nilgiri District.

The sub problem of the study was to construct norms on selected physical fitness variables for boys and girls of various age groups of high schools and higher secondary schools of Nilgiri district.

#### **1.5 Delimitations**

1. The study was delimited to 1200 boys and 1200 girls studying in 12 Government, 8 Aided and 5 Private high schools and higher secondary schools in Nilgiri district of the academic year 2019-20 and categorized as under 14 years, under 15 years, under 16 years, and under 17 years.

2. The study was further delimited to eight Postural deformities such as:
  - i. Scoliosis
  - ii. Lordosis
  - iii. Kyphosis
  - iv. Round shoulder
  - v. Knock knees
  - vi. Bow legs
  - vii. Claw foot
  - viii. Flat foot
3. The study was further delimited to New York posture test for testing six Postural deformities such as Scoliosis, Lordosis, Kyphosis, Round shoulder, Knock knees and Bow legs.
4. The study was further delimited to Foot print test for testing two postural deformities such as Claw foot and Flat foot.
5. The study was further delimited to thirteen Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility (Trunk & Back), Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power I, Explosive power II and Reaction time.
6. The study was further delimited to the following tests for the collection of data on evaluating the eight postural deformities and for testing of the thirteen physical fitness variables as detailed below:

**Table 1***Postural deformities selected for the study*

Sl. No.	Variables	Test
1.	Scoliosis	New York state posture test
2.	Kyphosis	New York state posture test
3.	Lordosis	New York state posture test
4.	Round shoulders	New York state posture test
5.	Bow legs	New York state posture test
6.	Knock knees	New York state posture test
7.	Claw foot	Foot print test
8.	Flat foot	Foot print test

**Table 2***Physical fitness variables selected for the study*

Sl. No.	Variable	Test
1.	Speed	50 mts. Dash (Flying start)
2.	Agility	4x10 mts. Shuttle run
3.	Static balance	Stork stand test
4.	Dynamic balance	Johnson's modified bass test
5.	Movement time	Nelson's hand and arm reaction test
6.	Flexibility (Trunk & Back)	Sit and reach test
7.	Angle flexibility	Goniometer
8.	Abdominal strength	Sit-ups in one minute
9.	Coordination	8 figure Duck test
10.	Endurance	Cooper's 8-minute run
11.	Explosive power I	Vertical jump test
12.	Explosive power II	Standing broad jump
13.	Reaction time	Nelson's hand reaction test

## **1.6 Limitations**

1. The difference that exists among the subjects due to varied social, cultural and economic factors cannot be controlled, and this is considered as a limitation of this study.
2. The lifestyle, nutritional status and family background of the subjects selected cannot be controlled, and this is considered as another limitation of this study.
3. The differences that exists among the subjects due to varied social, cultural and economic factors cannot be controlled and this is considered as a limitation of this study.
4. The environmental changes and climatic conditions during the testing period were not considered and this is considered as another limitation of this study.

## **1.7 Hypotheses**

1. There will not be any significant difference in means among Boys and Girls irrespective of the type of School and Age on the selected thirteen Physical fitness variables.
2. There will not be any significant difference in means among the four selected Age groups irrespective of the type of School and Gender such as Under 14 years, Under 15 years, Under 16 years and Under 17 years on the selected thirteen Physical fitness variables.
3. There will not be any significant difference in means among the three type of schools such as Government, Aided and Private irrespective of Age and Gender on the selected thirteen Physical fitness variables.
4. There will not be any association between the selected Postural deformities and different Age groups irrespective of Gender and the type of School.
5. There will not be any association between the selected Postural deformities and Gender irrespective of Age and the type of School.

6. There will not be any association between the selected Postural deformities and different type of Schools irrespective of the Age and Gender.
7. There will not be any prominent factors related to Physical fitness among Under 14 year boys irrespective of the type of School.
8. There will not be any prominent factors related to Physical fitness among Under 14 year girls irrespective of the type of School.
9. There will not be any prominent factors related to Physical fitness among Under 15 year boys irrespective of the type of School.
10. There will not be any prominent factors related to Physical fitness among Under 15 year girls irrespective of the type of School.
11. There will not be any prominent factors related to Physical fitness among Under 16 year boys irrespective of the type of School.
12. There will not be any prominent factors related to Physical fitness among Under 16 year girls irrespective of the type of School.
13. There will not be any prominent factors related to Physical fitness among Under 17 year boys irrespective of the type of School.
14. There will not be any prominent factors related to Physical fitness among Under 17 year girls irrespective of the type of School.
15. There will not be any prominent factors related to Physical fitness among boys irrespective Age and the type of School.
16. There will not be any prominent factors related to Physical fitness among girls irrespective of Age and the type of School.
17. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 14 year boys, irrespective of the type of School.
18. There will not be any prominent items with loading greater than or equal to



- $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 14 year girls, irrespective of the type of School.
19. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 15 year boys, irrespective of the type of School.
  20. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 15 year girls, irrespective of the type of School.
  21. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year boys, irrespective of the type of School.
  22. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year girls, irrespective of the type of School.
  23. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 17 year boys, irrespective of the type of School.
  24. There will not be any prominent items with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 17 year girls, irrespective of the type of School.

## **1.8 Operational definition and explanation of key terms**

### ***Scoliosis***

Scoliosis is an abnormal curvature of the spine in the lateral plane, i.e., curvature of the spine from side to side and any deviation of more than  $20^\circ$  is a pronounced Postural deformity. Besides, any deviation of between  $10^\circ$  and  $20^\circ$  is called mild Scoliosis and which are less than  $10^\circ$  is a mere postural variation (Rasen and Bruke, 1978).

### ***Lordosis***

Lordosis is an excessive curving of the lower spine in the lateral plane and is often associated with Scoliosis or Kyphosis (Shultz et al., 2000).

### ***Kyphosis***

Kyphosis is an excessive curvature of the spine in the sagittal (anterior-posterior) plane. The normal back has 20° to 45° of curvature in the upper back (thoracic and sacral regions) and anything in excess of 45° is called Kyphosis (Shultz et al., 2000).

### ***Round shoulder***

Round shoulder is a Postural deformity that occurs when the shoulder muscles gradually curve forward in a hunched over position (Medical Dictionary, 2007).

### ***Knock knee***

It is an abnormal curvature of the lower legs marked by inward protruding of both knees, resulting in a large gap between the feet and ankles when the knees are touching. The medical name of knock knee is Genu Valgum (Medical Dictionary, 2007).

### ***Bow leg***

Bow leg is a physical deformity marked by outward bowing of the lower legs in which the knees stays wide apart when a person stands with the feet and ankle together, thereby giving an appearance of an archer's bow. The medical name of Bow leg is Genu varum and is also known by Tibia varum (Shultz et al., 2006).

### ***Claw foot***

Claw foot, also known as claw toes, is a condition where an individual's toes bend into a claw-like position. Claw foot can appear from birth, or may bent later on (Medical Dictionary, 2005).

### ***Flat foot***

Flat foot is a postural deformity in which the arches of the feet come into complete or near complete contact with ground and is also called as Pesplanus or Fatters arches (Ackland et al., 2009).

### ***Speed***

Speed is the ability of the individual to make successive movements of the same kind in the shortest period of time (Carlton R. Mayer, 1974).

### ***Agility***

Agility is to change direction quickly and to control body movements (Harrison & Clarke, 1976).

### ***Static balance***

Static balance is an individual's ability to control equilibrium in rest (Susan j Hall Basic Bio Mechanics ISBN 007116365).

### ***Dynamic balance***

Dynamic balance is an individual's ability to Control Equilibrium in rest. (Susan j Hall Basic Bio Mechanics ISBN 007116365).

### ***Movement time***

“Movement time is defined as the time taken to complete a discreet, predefined motor task “Movement time is the process of any change in the position of the body (or a body part) (Encyclopedia of movement Disorders)

### ***Flexibility***

Flexibility is the ability to use the joints fully through a wide range of motion (Carbin and Linnndsey, 2005)

### ***Angle flexibility***

Ankle flexibility is the flexibility of the ankle joint, its surrounding muscles and tendons to have a greater range of motion. (Carbin and Linnndsey, 2005)

### ***Abdominal strength***

Abdominal strength is the strength of the abdominal muscles (a part of the core group of muscles) and, when tested by using the sit ups done in 1 minute, the abdominal strength and endurance will be tested.

(Gorsuch Scarisbric Publishers, 1994),

### ***Coordination***

Coordination is the ability to execute smooth, accurate, controlled motor responses (optimal interaction of muscle function). Coordination is the ability to select the right muscle at the right time with proper intensity to execute a proper action. Library series: Vol. 39-ISBN-978-83-61509-36-3. Coordination Abilities in Physical Education, Sports and Rehabilitation Edited by: Tomasz Niżnikowsk

### ***Cardio-respiratory endurance***

Cardio-respiratory endurance is the ability to continue despite fatigue or under difficult conditions for longer periods of time (Saltin, 1973).

### ***Strength***

Strength generally defined as the muscular force exerted against movable and immovable objects, it is best measured by tests which require one maximum effort on a given movement or position (Jonson Nelson, 1998)

### ***Explosive power***

Explosive power is the ability to produce a maximum amount of force in a very short period of time. A simple example of a movement where explosive power can be seen is jumping (Uppal and Gautham, 2000).

## 1.9 Significance of the Study

The results are a means to an end that should never be considered as an end in themselves. The results of the study can be a significant aid in the prescription of exercise for the correction of Postural deformities and for the development of Physical fitness.

1. The study will help to identify Postural deformities among boys and girls of Government, Aided and Private high schools and Higher secondary schools of Nilgiri district.
2. The study will provide information to develop individual exercise programme for the correction of Postural deformities.
3. The study will provide an educational experience for creating an awareness on Postural deformities among Government, Aided and Private high school students.
4. The study will motivate students to improve the lifestyle by actively participating in physical activities and by doing exercises, thereby keeping up a good posture.
5. The results of the study will enable to perform an indirect educational function by making the parents aware of postural deformities and the importance of Physical fitness components.
6. The results of the study will enable to provide clues for methods of health care development programs for those having postural deformities.
7. The results of the study will enable to stimulate interest in Postural deformities, Physical Fitness and Health-related topics among school going children of Nilgiri district.
8. To study and understand about the development and maintenance of good posture and good functional capacities in Physical fitness components during childhood.

9. The results of the study will enable the parents and teachers to enrich the knowledge on Postural deformities formed and for its correction during the course of study in schools.
10. The results of the study will enable Physical Education teachers, school administrators, parents and students to understand the association of various Postural deformities and Physical Fitness variables.
11. The results of the study will enrich knowledge on the prominent physical fitness variables among different age groups of boys and girls.
12. The norms constructed as part of the results will enable assessment of Physical fitness of boys and girls of age between 14 and 17 years of high schools and higher secondary schools of Nilgiri district.

## Chapter II

# **Review of Related Literature**

---

A careful search and exploration of the related literature with regard to the present study was essential to have an insight into the work already done. The scholar with the available literature has gained valuable methodological hints from their procedures and findings and they were of great importance and help during the course of this study.

Although numerous researches have been conducted regarding the health, physical fitness and postural problems of the school going children, yet no proper and scientific research has been focused on the very postural problem of the school boys in relation to their family background. Therefore, the scholar has selected a new scientific and burning problem related to the postural defects of the young boys and examined their relationship with the family background of the individuals. However, out of the extensive search, which the scholar has made to locate the related literature, the relevant reviews found are cited in this chapter.

A serious attempt was made by the research scholar to go through the literature related to the present study. A brief review of these studies is enumerated in this chapter.

Van Hagen et al. (1951) pointed out interrelationship between emotions and postural deformities. Emotions tend to reveal the feeling of the individual and the conscious assumption of good posture can bring about the feelings of self-confidence and adequacy. Psychologists have given stability to this concept when they have indicated from their studies that correct posture keeps up the spirits and tends to vanish fear and depression.



Rathbone (1955) pointed out that there are various factors for the cause of weak feet. Faulty carrying positions of infants or faulty skeletal alignment of legs and feet during the first weight bearing on knees or feet during the creeping and toddling stages or faulty shoeing when little feet are so soft. These mechanical features will cause poor foot statistics.

Siemsen and Dolan (1963) reported that the incidence of the postural defects among senior high school boys: defective antero-posterior (56.6%); scoliosis (49%); uneven shoulders (41.5%); flat foot (37.7%); bow leg (13.2%); and knock knees (7.55%).

Kumar et al. (1975) tried to find out the effect of the structure of foot on functional activity. High arch indicated better feet which are stronger, more elastic and more efficient in all natural uses of the feet. The higher the arch, the better will be the leverage, the action of the foot and efficiency of functional activity especially while running. Thus, high arched foot should be preferred for the best runner, whereas low arched feet indicate conditions which are associated with pain, early fatigue or inefficiency in all natural uses of foot.

Jones (1990) attempted to find out the facts of flat foot impacts, researchers at the US army research institute of environmental medicine, the Walter reed army institute of research and the Nike sports research laboratory collaborated in this study. The subjects selected were divided according to their arch height, who were then monitored for training associated injuries. Researcher also found that, flat foot may actually be protective instead of high arches; and hence high arches may be of great risk factor or injury. The results also indicated that flat foot can be avoided, besides, lower limb injuries trainees with high arches were 2.4 times additional probable to suffer a foot injury than flat-footed trainees.

Griegel (1992) wanted to identify the incidence of postural abnormalities of the thoracic, cervical and shoulder regions. The subjects were of two age groups, one 20 to 35 years and the second from 36 to 56 years group. The pain questionnaire and plumb line test for postural assessment of forward head, round shoulder and Kyphosis were tested for. Chi-square analysis found that postural deviations were prevalent,

forward head=66 %, kyphosis=38%, right shoulder=73%, left rounded shoulder=66%, The study also revealed that no relationship was found between postural abnormality and incidence of pain. Has also concluded, that kyphosis and round shoulders increased the incidence of cervical, interscapular and headache pain.

Clarke (1993) had mentioned the fact that arches indicates the better feet which are stronger, more elastic and more efficient in all uses of the feet. Low arches indicate conditions which are coincident with pain, quick fatigue of inefficiency during hard uses of the feet.

Miller and Allen (1993) tried to find out the causes of poor posture and poor body mechanics including environment influences, psychological condition, pathological conditions, growth handicaps, congenital defects, and nutritional problems. Any of these may have an unfavorable effect in the posture of the growing child, the adolescent, or on the adult. Extended periods are needed to set up good body mechanics.

Kratenova (2007) in his study tried to identify the prevalence and the main risk factors of poor posture among school children in Czech Republic. In this cross-sectional study a total of 3520 children of age 7, 11 and 15 years were selected in 2003. Data was collected through screening questionnaires and medical examination. Significant difference on occurrence of poor posture was found between 7 years old children 33.0% and 11 years old 40.8%, the most normal detected defects were as follows: protruding scapulae (50% of all children), increased lumbar lordosis (32%), and round back (31%). Children used to spend 4 hours per week playing sports activities and 14 hours per week watching TV/VCR and playing computer games. No sports activities were reported by 20% of children and results. Besides, those students who were not participating in Physical activities had significant difference on poor posture than children who was participating in sports and games.

Isabel et al. (2009) wanted to evaluate and detect the difference between normal deviation during growth and compensatory alterations. The subjects were 247 students of which 131 were boys and 116 were girls hailing from Jaguariuna and Sai Paulo of Brazil. The postural assessment of subjects were done at sagittal anterior and

posterior coronal planes. Kendall points were used as the normal reference, researcher found main deviations like protracted shoulder (39.7%), shoulder unbalance (50.2%), abducted scapula (40.5%), pelvic unbalance (21.5%), knock-knee (29.6%), pelvic ante version (19%), knee hyperextension (19%), medial rotation of hip (12.9%), protracted cervical (11.7%), head tilt (15.4%), thoracic hyperkyphosis (9.7%) and lumbar hyperlordosis (26.3%). The study concluded that postural alteration was identified among school children such as unbalance and protraction of the shoulders, abducted scapula, lumbar hyper lordosis and knock-knee. Generally some are said to be naturally corrected during growth, but some postural abnormalities require early intervention such as protraction and inclination of the cervical spine.

Ellis (2010) compared the occurrence of postural deviations and body composition among two tribal groups in South Africa. Total sample size 219 of which 79 were African boys and 140 were Caucasian boys of age between 11 to 13 years. Percent of body fat measured by BMI, posture grid and New York posture test were used for assessment of postural deformities. Independent t-test was used to analyze the data. Results showed no significant difference in occurrence among different age groups. The African group had higher occurrence in most of the deformities with winged scapulae, protruding abdomen and Lordosis having significant differences with regard the Caucasian group. The higher occurrence of Kyphosis and pronated feet and higher occurrence Flat foot in South Africa were also noted. The researcher also concluded that periodic examinations be conducted both in rural and urban schools. Besides, recommended to have more accountable education and screening programs, early recognition and treatment programs for children which will prevent postural diseases becoming chronic adult disabilities as an important health policy for the young people.

Stroebel et al. (2010) defined the concept of good posture. It is mandatory in 26 states of United States (US) to have screening for school children between 10 to 16 years of age for poor physical condition, due to playing video games, watching television, motorized transportation, junk food habit and lack of physical activities. In developing country like South Africa overweight or obesity has increased linearly and

co-exists with under nutrition. Finally concluded that, there is a vital necessity for avoiding harmful trends in diet and physical activity. Detection of postural deformities at an early period makes early treatment possible, which may, in future, prevent severe postural abnormalities.

Abolarian et. al. (2011) investigated the role of age and type of foot wear as predictors of flatfoot among school children of urban and rural areas of south-western Nigeria. 560 subjects of age between 6 and 12 years were selected and divided into two groups rural and urban. Static footprint was taken on a white duplicating paper after which the instep was measured for categorization into severe flat foot, high arch flat foot, normal and flat foot. Besides, BMI was also calculated. Results showed that a significant relationship between the presence of flat foot, age and type of footwear. There was significant difference in prevalence of flat foot by age group at 10 years. Conclusion of the study was that age is the primary predictor for flat foot while the type of footwear was not.

Bubanj et. al. (2012) assessed the postural status of the high school children, both male and female to determine the frequency of the Postural deformities in the sagittal plane i.e., the frequency of Kyphotic, Lordotic, and Kypho-lordotic bad postures. The subjects were 236 high school going children (male N=103 or 43.6%, female N=133 or 56.4%). Height of 173.42+7.62 cm, weight 6.6+10.35 or of age 16.82+1.33 (Mean  $\pm$  St. Dev). Descriptive statistics and Z-test for the difference between two proportions were calculated. Significant differences were found on the Kyphotic, Lordotic and Kypho-lordotic postures (more present among girls, sig=0.000, sig=0.000, sig=0.000). It was concluded that, while preventing and correcting postural deformities, there should be a focus on the isometric muscle potential first, i.e., the endurance of the muscles, its strength and the strain which accompanies while doing exercises.

Eivazi and Alilou (2012) assessed the presence of musculo-skeletal deformities in lower extremities to identify faulty postures among school going children of rural regions of Iran. 172 school children of age ranging between 5 to 20 years were selected as subjects. Results showed that, faulty posture and lower limb

deformities were highly prevalent among school children of rural regions. And reiterated extra concentration to be given for implementing school based regular testing programs intended for detection of any musculoskeletal-related abnormalities and for taking preventive steps to reduce their negative consequences.

Minoo et. al. (2013) tried to determine the prevalence of spinal deformity, knees and feet for which a total 400 female students of age between 18 to 19 years were selected. The multistage cluster sampling method was used. Questionnaires, New York Posture tests using plump lines, posture screen, calipers, measuring tapes and scales for used for assessing and collecting data on deformities. For analysis the data SPSS software was used for statistical calculations. The results showed that, there was a meaningful relationship with weight and Lordosis, Kyphosis and how to do the homework, between Scoliosis and how to sit on the bench, on shoulders carry the heavy weight like books and bags, as well as between hallux valgus and wearing narrow-toed shoes and high heels. Besides, no observed significant associations were found between the height and the heads up, and the genu varum and how to sit in the students. The significant association between certain deformities and addictions was found to be because of poor consciousness among students. Correct body position while reading, doing homework, sitting and wearing painful shoes and carrying objects is wrong and therefore awareness among students have to be generated for identifying faulty postural deformities, its causes and remedial actions should be introduced to if found essential.

Mitova et. al. (2014) pointed out that there were many causes of postural deviations among children such as lack of physical activities, addiction of computer based activities form early childhood, to carry the heavy bag packs on back and shoulder, improper diet, traumatic injuries and decreased sport participation. It was also concluded that, lack of physical activities, appropriate check-ups and clerical set-ups were causes of these postural deformities among school going children.

Malepe et. al. (2015) attempted to determine the relationship between postural deviations and body mass index (BMI) among students of University of Venda, South Africa. For this cross-sectional survey 100 students were randomly selected of mean

age  $22\pm 2.4$  years. BMI, Kyphosis, Scoliosis, and Lordosis were assessed through lateral, anterior and posterior views of postural deviations. Descriptive statistics, percent analysis and Chi square was used for the statistical analysis and the level of significance was set at 0.05. The study concluded that Kyphosis was the most common type of postural deformity found among students. Gender and BMI were connected with postural deformity among the students. Male students were found to have significant difference in Kyphosis and Lordosis than female students except in Scoliosis. Female students had greater prevalence of postural deviations than males.

Said et. al. (2015) wanted to establish the relationship between mobility, balance performances with physiological factors and foot postures with anthropometric characteristics. A cross-sectional observational study was conducted in community-dwelling elderly (age:  $69.86\pm 5.62$  years). On the basis of foot posture index classification made grouped into neutral, pronated, and supinated foot. Anthropometric measurements such as height, weight, BMI were tested. Lower limb strength test measured by 5-STS, endurance measured by 30 chair rise test, mobility measured by TUG and balance was measured by FSST. Data were analyzed using Spearman's correlation coefficient. Body weight was negatively and moderately correlated with mobility in supinated foot; moderate-to-high positive linear rank correlation was found between lower limb strength and mobility (0.80) for pronated and neutral foot. Linearly correlated lower limb endurance with mobility in pronated and neutral foot. In balance performance there was no correlation observed with physiological factors in any of the foot postures. Researcher revealed that muscular function may be the most important feature to make movement possible in older persons regardless of the type of foot postures.

Quka et. al. (2015) in their study analyzed recent data about the prevalence of postural deformities among children and the threat factors that influence the incidence of these deviations among children. The prevalence of poor posture in children were caused by lack of physical activities and lifestyle which have increased during the last two decades. Obesity is the primary factor that effect postural deviations among children and is also a risk factor that increases the chance of its incidence. Researcher

concluded that it is more important to give attention to existence of poor posture among children which is essential to be diagnosed before growth procedure finishes in order to prevent its annoyance.

Rasheed and Pagare (2015) tried to find the effect of flat foot deformity on agility and explosive leg strength of school going children, for which 20 subjects (10 flat foot and 10 normal) of age from 9 to 14 years were selected randomly. Foot print were measured by used the wet foot print test. Results revealed no significant difference in agility and explosive leg strength between flat footers and non flat footer students.

Kashyap et al. (2015) were of the opinion that posture reflects on a person's personality and habits play an important role in developing the personality and posture. Good posture means pleasant habits, smiling and having a smart personality which reflects self-assurance, bravery and well closely controlled approach and behavior. Good posture helps the body to work better with minimum effort and is a health indicator of homosapiens and it influences the physical, mental and psychological behaviours of a person. Correct alignment of body parts helps to attain balance while running, walking, standing and sitting and are called habitual posture.

Batistao et. al. (2016) studied to assess the prevalence of postural changes in school children, a of total 288 (117 boys and 171 girls) children were selected of age between 6 to 15 years. The mean age was 10.6 ( $\pm$  2.4), the mean body weight was 38.6 ( $\pm$  12.7 kg) and the mean height was 1.5 ( $\pm$  0.1m). Plump line test was used for the collection of data. The data were analyzed using chi-square test and logistic regression analysis at 0.05 level of significance. Researchers found the following deviations to be prevalent among school children: thoracic hyper kyphosis, 30.2%, lumbar hyper-lordosis, 37.2%, shoulder elevation, 74.3%, forward head posture, 53.5%, valgus knees, 51.7%, asymmetry of the iliac crests, 43.1% and winged shoulder blades, 66.3%. The associated factors were age, gender, BMI and physical activity. Conclusion of the study was to understand the deviations developed to execute the preventive measures and rehabilitation activities. Besides, some of the linked factors were found to be modifiable.

Verma et. al. (2016) compared the HRPF of B.P.E, B.C.A. and B.E. students studying in Hanuman Vyayam Prasarak Mandal, Amaravathi, Maharashtra. A total 60 men students were selected for the study whose age ranged  $18 \pm 2.23$  year. The selected HRPF components were cardio-vascular endurance, body composition, flexibility, muscular strength and muscular endurance. ANOVA was used to compare HRPF. The results showed no significant difference in fat and in lean body mass as the F-value was 2.144 (sig, 0.127) and 1.84 (sig. 0.168) respectively. Significant differences were found on sit and reach (flexibility), chin up (muscular strength) one mile run (cardiovascular endurance) and sit up (muscular endurance) as F—values obtained were 5.612 (sig. 0.006), 15.66 (sig. 0.000), 17.00 (sig. 0.000) and 13.49 (sig. 0.000), respectively.

Durai (2017) in his study to compare Postural deformities among sportspersons and non-sports persons of school boys of 9 to 11 years of age. A total of 300 school boys were randomly selected from Tamil Nadu, India. The postural deformities were selected were of Neck, Shoulder, Trunk and Lower back which were assessed using the New York Posture Test. Significant differences were found among sports persons and non-sports persons. The level of significance was 0.05.

Kaur and Mahi (2017) conducted a study to find out the ratio of school going children who had Postural deformities, 100 school boys of 10-18 years were randomly selected from Punjab. The selected Postural deformities were Kyphosis, Lordosis, Scoliosis, Knock knee, Flat foot and Bow legs. The posture grid chart was used for the collection of data. Percent analysis showed rural area of Punjab have higher numbers of knock knee and lesser of Flat foot among boys.

Ramalingam et al. (2017) conducted a study to find the prevalence of Postural deformities among high school students for which a total of 100 (35 male and 65 female) students were selected and were tested using the plump line test to assess the sagittal and frontal alignments and a survey questionnaire was administered to recognize their postural awareness. The results from percent analysis revealed that 86% (n=86) high school students were reactive to the importance of posture and 70%



(n=70) were aware about their own posture. From postural screening, 20% of boys (n=7) and 10.8% of girls (n=7) subjects were found in postural deviations.

Kumar (2018) conducted a study to compare the physical fitness among boys of different age groups. A total of two thousand boys, 500 subjects each of age ranging from 13-16 years. The AAPHER youth fitness test was selected for the purpose of this study. Significant differences were obtained on pull ups, sit ups and shuttle run among various age groups of 13 to 16 years boys. Standing broad jump variables was 13-16 years, 50 yard dash variables was 13-16 years, 600 yard run/walk variables was 13-16 years were used. The level of significance was 0.05.

## Chapter III

# Methodology

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The selection of subjects, selection of variables, tests and criterion measures, experimental design, collection of data, procedure for administration of the tests, reliability of data and the statistical techniques used are presented in this chapter.

### 3.1 Selection of Subjects

The subjects were 1200 boys and 1200 girls of High schools and Higher secondary schools of Government, Aided and Private schools of Nilgiri district. For this study the subjects were categorized as boys and girls Under 14 years, Under 15 years, Under 16 years and Under 17 years.

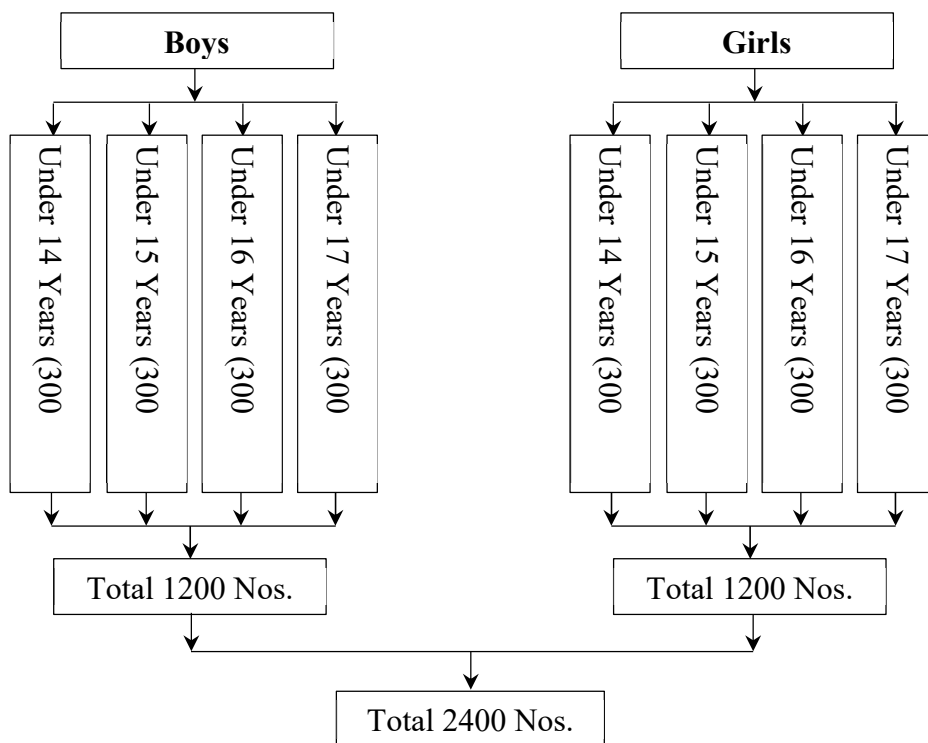
**Table 3**

*The details of subjects selected for the study*

<b>Particulars</b>	<b>No. of schools</b>	<b>Gender</b>	<b>No. of students</b>
Government schools	12	Boys	600
		Girls	600
Aided schools	8	Boys	400
		Girls	400
Private schools	5	Boys	200
		Girls	200
<b>Total</b>	<b>25</b>		<b>2400</b>

**Figure 1**

*The gender and age wise number of subjects selected for the study*



### 3.2 Selection of Variables

The selected postural deformities, the tests used and its criterion measures used in this study are listed in table 4.

**Table 4**

*Postural deformities variables selected for the study along with the tests and criterion measures*

Sl. No.	Variables	Test	Criterion Measures
1.	Scoliosis	New York state posture test	Degree
2.	Kyphosis	New York state posture test	Degree
3.	Lordosis	New York state posture test	Degree
4.	Round shoulders	New York state posture test	Degree
5.	Bow legs	New York state posture test	Degree
6.	Knock knees	New York state posture test	Degree
7.	Claw foot	Foot print test	Degree
8.	Flat foot	Foot print test	Degree

The selected physical fitness variables, the tests used and its criterion measures used in this study are listed in table 5.

**Table 5**

*Physical fitness variables selected for the study along with the tests and criterion measures*

Sl. No.	Variable	Test	Criterion Measures
1.	Speed	50 mts. Dash (Flying start)	1/100 <sup>th</sup> of a second
2.	Agility	4x10 mts. Shuttle run	1/100 <sup>th</sup> of a second
3.	Static balance	Stork stand test	1/100 <sup>th</sup> of a second
4.	Dynamic balance	Johnson's modified bass test	Numbers
5.	Movement time	Nelson's hand and arm reaction test	1/100 <sup>th</sup> of a second.
6.	Flexibility (Trunk & Back)	Sit and Reach Test	Centimeters.
7.	Angle flexibility	Goniometer	Degrees
8.	Abdominal strength	Sit-ups in one minute	Numbers
9.	Coordination	8 figure Duck test	1/100 <sup>th</sup> of a second
10.	Endurance	Cooper's 8-minute run	Meters
11.	Explosive power I	Vertical jump test	Centimeters
12.	Explosive power II	Standing broad jump	Centimeters
13.	Reaction time	Nelson's hand reaction test	1/100 <sup>th</sup> of a second.

### 3.3 Experimental design

The experimental design used for this study was simple random group design and the subjects were randomly selected from each of the age group from schools of Nilgiri district from the enrolment rolls as on the 6<sup>th</sup> working day of the academic year 2019-20.

### 3.4 Procedure for administration of tests

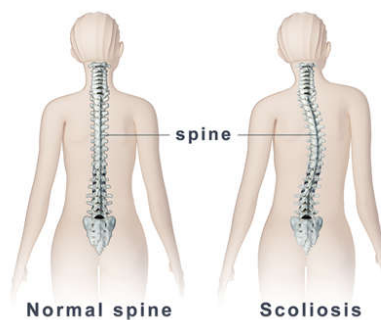
#### SCOLIOSIS

Test : New York State Posture Test

Equipment : Wall, Plumb line, Chalk

Purpose : To assess Scoliosis

Procedure : A plumb line was suspended vertically downwards in front of a wall. A line was drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar was positioned at the 10 feet line. The subject will be positioned in such a manner that the scholar can view the subject against the plumb line and the wall, so that the plumb line behind the subject hangs down from the head to the toe cutting the body into right and left halves, so as to assess the lateral deviations related to Scoliosis.



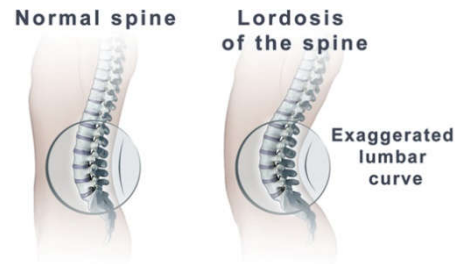
#### LORDOSIS

Test : New York State Posture Test

Equipment : Wall, Plumb line, Chalk

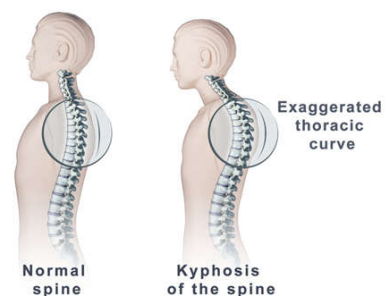
Purpose : To assess Lordosis

Procedure : A plumb line was suspended vertically downwards in front of a wall. A line was drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar was positioned at the 10 feet line. The subject will be positioned in such a manner that the scholar can view the subject against the plumb line and the wall. The subject was asked to stand facing the scholar at the 3 feet line perpendicular to the scholar on the sagittal plane cutting the body into front and back halves, so that the plumb line passes either on the left or right side of the subject, so as to assess Lordosis.



### KYPHOSIS

Test : New York State Posture Test  
 Equipment : Wall, Plumb line, Chalk  
 Purpose : To assess Kyphosis  
 Procedure : A plumb line was suspended vertically downwards in front of a wall. A line was drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar was positioned at the 10 feet line. The subject will be positioned in such a manner that the scholar can view the subject against the plumb line and the wall. The subject was asked to stand facing the scholar at the 3 feet line perpendicular to the scholar on the sagittal plane cutting the body of subjects into front and back halves, so that the plumb line passes either on the left or right side of the subject, so as to assess Kyphosis.



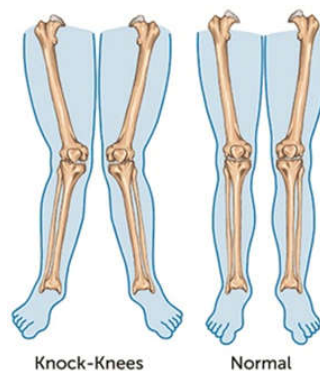
## ROUND SHOULDERS

- Test : New York state posture test
- Equipment : Wall, Plumb line, Chalk
- Purpose : To assess Round shoulders
- Procedure : A plumb line is suspended vertically downwards in front of a wall. A line is drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar will be positioned at the 10 feet line. The subject will be positioned in such a manner that the scholar can view the subject against the plumb line and the wall. The subject was asked to stand facing the scholar at the 3 feet line perpendicular to the scholar on the sagittal plane cutting the body of students into front and back halves, so that the plumb line passes either on the left or right side of the subject, so as to assess Round shoulders.



## KNOCK KNEES

- Test : New York state posture test
- Equipment : Wall, Plumb line, Chalk
- Purpose : To assess Knock knees .
- Procedure : A plumb line was suspended vertically downwards in front of a wall. A line was drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar will be positioned at the 10 feet line. The subject was positioned in such a manner that the scholar can view the subject

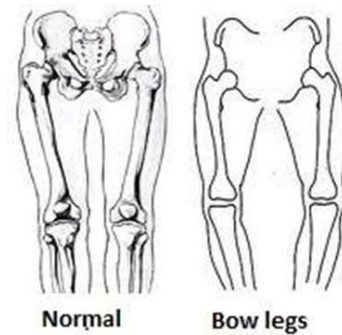




against the plumb line and the wall, so that the plumb line behind the subject hangs down from the head to the toe cutting the body into right and left halves, so as to assess the lateral deviations related to Knock knees.

## BOW LEGS

- Test : New York State Posture Test
- Equipment : Wall, Plumb line, Chalk
- Purpose : To assess Bow legs
- Procedure : A plumb line was suspended vertically downwards in front of a wall. A line is drawn 3 feet parallel to the wall. The subject was asked to stand at the 3 feet line in front of the wall and the scholar will be positioned at the 10 feet line. The subject will be positioned in such a manner that the scholar can view the subject against the plumb line and the wall, so that the plumb line behind the subject hangs down from the head to the toe cutting the body into right and left halves, so as to assess the lateral deviations related to Bow legs.



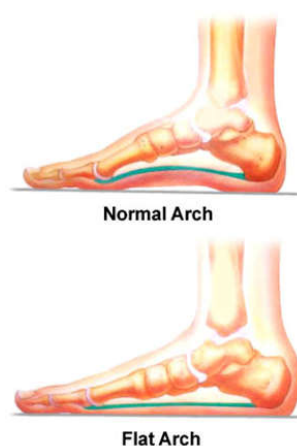
## CLAW FOOT

- Test : Foot print test
- Purpose : To assess Claw foot.
- Procedure : Claw foot was evaluated subjectively, for which the scholar has undergone training under an expert



## FLAT FOOT

- Test : Foot print test
- Equipment : White paper, Ink, Steel pad
- Purpose : To assess Flat foot
- Procedure : The foot print was taken as the criterion for the detection of flat foot. Before taking the foot print, the subject was given the detailed instructions regarding the use of pedograph. Foot print was taken on the pedograph which was made of an ordinary steel pad sheets. Finger print ink was evenly spread on the pad sheets with a brush. The subject was asked to stand bare-footed on the pedograph and made to press the feet for proper inking and thereafter was asked to stand on the paper sheets placed on a hard card board and to press the feet carefully in order to have proper foot impressions on the paper. Through this method height of the longitudinal arc was obtained for detection of Flat foot.



The thirteen selected Physical fitness variables and tests used for this study are shown in Table 6.

**Table 6***Physical fitness variables selected for the study*

Sl. No.	Variable	Test
1.	Speed	50 mts. Dash (Flying start)
2.	Agility	4x10 mts. Shuttle run
3.	Static balance	Stork stand test
4.	Dynamic balance	Johnson's modified bass test
5.	Movement time	Nelson's hand and arm reaction test
6.	Flexibility (Trunk & Back)	Sit and reach test
7.	Ankle flexibility	Goniometer
8.	Abdominal strength	Sit-ups in one minute
9.	Coordination	8 figure Duck test
10.	Endurance	Cooper's 8-minute Run / walk test
11.	Explosive power I	Vertical jump test
12.	Explosive power II	Standing broad jump
13.	Reaction time	Nelson's hand reaction test

**50 mts. Dash (Flying start)****Purpose:** To test speed.**Equipment:** Measuring tape, stopwatch, flags.**Procedure:** How the test will be conducted was explained to the subjects.**Phase 1: Warm Up Session**

Warm-up sessions are designed to reduce the risk of injury while maximising the subject's performance. A warm-up routine for both boys and girls of 5-8 minute period was given since their fitness level will be much lower.



### Phase 2: Acceleration Phase or Approach Run

This phase is for acceleration of the subject which enables the scholar to test the Speed of the subjects.

#### Variations:

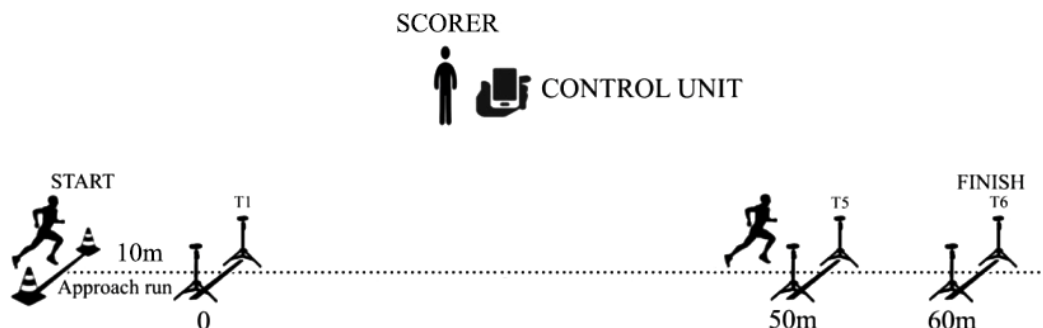
The approach run distances may need to be changed depending on the subjects' fitness levels; for example, girls only need 5 to 10 metres for acceleration, while boys may require more.

### Phase 3: Execution Phase or Test Phase

The test was being recorded only when the subject crosses the flag placed perpendicular to the scholar, 10 metres away from the start line for the acceleration phase, which is indicated by fixing flag on a pole. The scholar puts off the stop watch when the subject crosses the finishing line which is indicated by fixing a second flag on a pole.



**Scoring:** The minimum time required to cover a distance of 50metres measured in 1/100<sup>th</sup> of a second between the two flags placed.

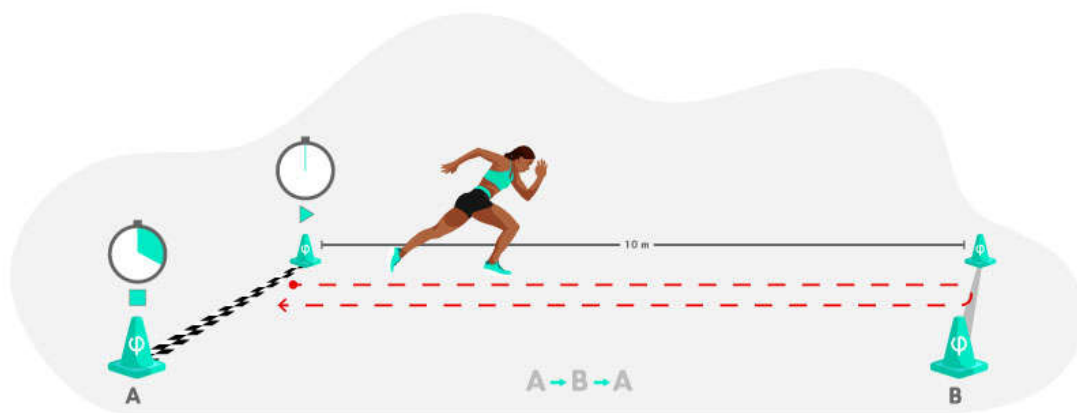


### 4 × 10 mts. Shuttle run

**Purpose:** To measure agility

**Equipment:** Stop watch, Flag, Wooden dumbbells

**Procedure:** To measure Agility, two lines were marked parallel to each other 10 meters apart on the ground. The subject stood behind one of the lines and two wooden dumbbells were kept behind the other line. On the signal 'Start' the subject ran to the wooden dumbbells took one dumbbell and return to the starting line for placing the dumbbell behind the line. The subject will again run to the second dumbbell which again is carried across to the starting line on subject's way back. Two subjects were allowed to run together.



### Stork Stand Test

**Purpose:** To measure Static balance.

**Equipment:** Stopwatch

**Procedure:** From a standing position on the foot of the dominant leg, the subject was asked to place the other foot on the inside of the supporting knee and the hands



on the hips. On the signal "begin" the heel will be raised from the floor and balance have to be maintained as long as possible without moving on the ball of the foot from its original position and by not allowing the heel to touch the floor. Each subject is allowed three trials.

**Scoring:** Score is the time elapsed between the time, the heel is raised and the balance is lost and is recorded in 1/100<sup>th</sup> of a second. The best of three trials was taken as the final score.



## Johnson's Modified Bass Test

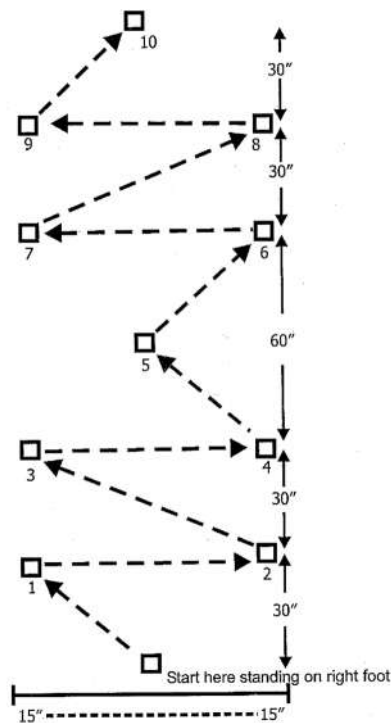
**Purpose:** To measure Dynamic balance

**Equipment:** Stop watch

**Procedure:** The subject was asked to stand with the right foot on the starting mark. On the signal, the subject jumped to the first mark and lands on the left foot, balancing on the ball of the foot as long as possible, up to a maximum of 5 seconds. Then the subject jumped to the next mark, landing on the right foot and tries to balance for five seconds on the ball of the foot. The subject continued this procedure, balancing on each mark as long as possible upto five seconds. A total of 10 landing spots was covered in each trial. Only one trial was given after a practice trial.

**Figure 2**

*Floor pattern for Modified bass test*



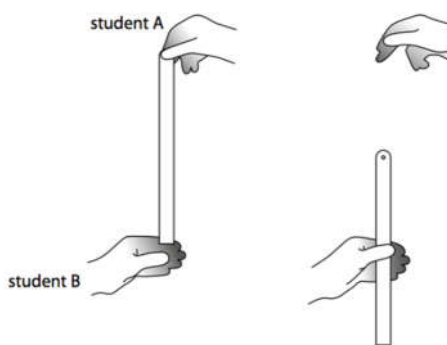
**Scoring:** The subject scores five points each time he / she lands successfully on the mark, plus one point for each second he / she maintains balance on a mark upto 5 seconds. The total points secured by the subject on all ten spots were recorded as the final score. Thus a subject's final score can be from zero to hundred.

### Nelson's hand and arm reaction test

**Purpose:** To test Speed of movement

**Equipment:** Table, chair and yard stick

**Procedure:** The subject was asked to sit on a chair facing the table. The palms were kept facing each other with the inside border of the little finger, resting along two lines which were marked on the edge of the table 12 inch apart. The scholar held the scale near the top, so that it hanged midway between the subject's palm and the baseline of the scale positioned evenly with the upper edges of the fingers of the subject, with the subjects looking at the concentration zone. After a preparatory command "ready" was given, the scale was dropped and subject stopped as quickly as possible, with an inward horizontal movement of the arms trying to catch the scale with both the palms. Before measuring the speed of movement all the details of the test were clearly explained to the subjects and each subject was given five practice trials. A total of twenty trials were given and the distance the scale fell through the hands before it was stopped was recorded.



**Scoring:** The average of middle ten trials was taken as the final score after eliminating five slowest and five fastest trials.





### Sit and reach test

**Purpose:** To measure the Flexibility of low back and hamstring muscles.

**Equipment:** A special apparatus consisting of a box fixed with a steel measuring scale extending over the front edge with the 23<sup>rd</sup> centimetre coinciding with the edge. The apparatus was placed against a turned bench to prevent it from sliding on the floor.

**Procedure:** The subject was asked to assume a long sitting position, with the feet against the box, later the subject was asked to keep the knees straight extending the arms forward, keeping one hand on the top of the other, palms facing down and finger pads on the top of the finger nails. If the subject was not able to keep the knees straight, the investigator held them down. Later, the subject was asked to reach directly forward along the measuring scale four times, holding the final position of maximum reach for at least one full second and for which only one trial was given.



**Scoring:** The farthest distance covered measured to the nearest centimetre was observed. The best of three fair trials was taken as the final score.

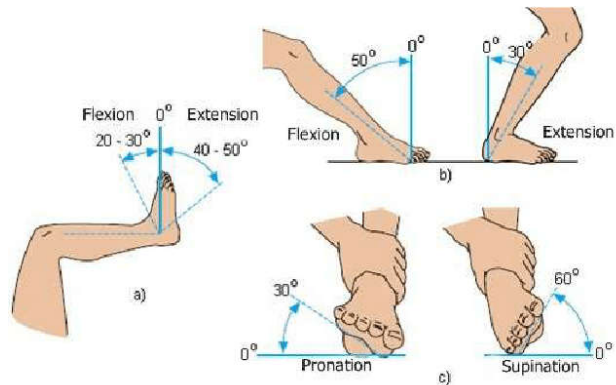


### Ankle flexibility

**Purpose:** The test measures the range of movement at ankle joint when foot is dorsiflexed from planter flexion.

**Equipment:** Goniometer and a table

**Procedure:** The subject was asked to sit with legs spread on the table with the back touching the wall and feet at the projecting corner of the table. The stationary wing of the goniometer was fixed to the lower leg and the centre of the goniometer to the medial malleolus and the



moving arm was adjusted on the flexing of the ankle. Initial reading was taken and recorded in degrees and ankle was dorsiflexed, that is pulled towards the anterior part of the leg and again the final reading was taken and recorded in degrees.

**Scoring:** The difference between the initial reading and the final reading was considered and the average of both ankles was taken as the final score of Ankle flexibility.



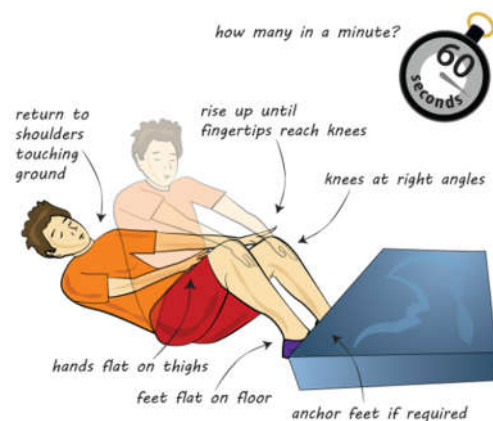


## Sit ups in one minute

**Purpose:** To measure abdominal strength and endurance.

**Equipment:** Stop watch, Gymnastic mat

**Procedure:** The subjects was asked to lie on the back with the knees bent, feet on the floor and heels not more than 12 inches from the buttocks. The ankle at the knees should be less than 90 degrees. The subject was asked to place the hand at the back of the neck. The partner both the feet placed to keep them in touch with the surface. The subject was asked to tightens his / her abdominal muscles and brings the head and elbows forward as he / she curls up finally touching elbows to knees. This action constitutes as one sit up. The subject returns to the starting position with elbows on the surface before performing the sit up again. The timer gives the signal "ready go!" and the sit up performance is stopped on the word "stop". . A foul nullifies the count for a sit up. The watch was started on the word "go" and stopped on the word "stop".



**Scoring:** The number of correctly executed sit ups by the subject in 60 seconds shall be the score.



### 8 Duck test

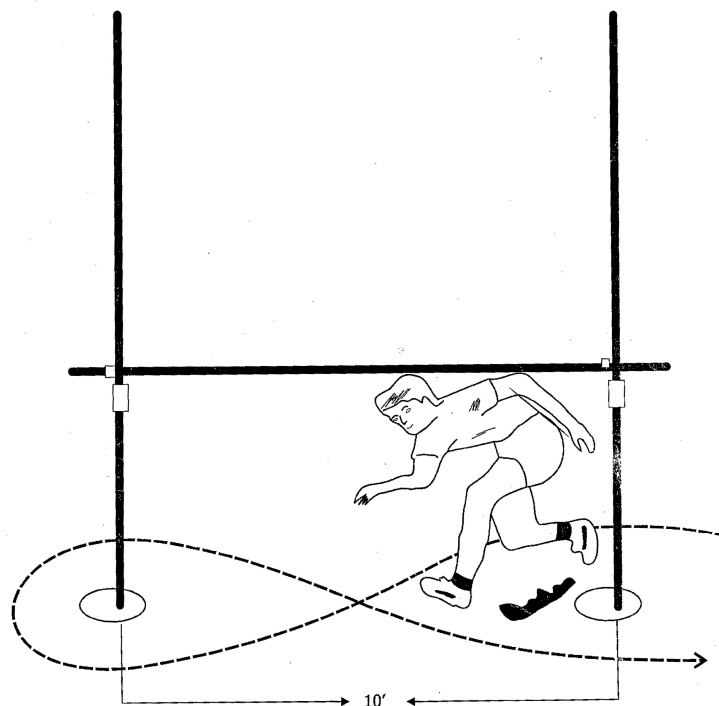
**Purpose:** To measure the ability of the subject to perform a number of complex motor movements simultaneously.

**Procedure:** To measure the ability of the subject to alter the body position while moving forward rapidly. Two uprights were placed 10 feet apart with the cross bar adjusted to the height of the subject's waist. The subject starts at the right of one of the upright on the signal "Go". The subject further runs under the cross bar, goes around the other upright, back under the cross bar again, and around the near upright. In other words, the subject runs around the uprights in a figure of 8 fashion, ducking under the Cross bar each time. This completes one cycle.

**Scoring:** The final score is the length of time required to complete four cycles.

**Figure 3**

*Figure of eight Duck test for Coordination*



Cooper's eight minute run/walk test

**Purpose:** To measure Cardio-respiratory endurance.

**Equipment:** Stop watch, Whistle, Measuring tape

**Procedure:** The subjects were asked to assemble behind the starting line. On the "start" signal, they run or walk as far as possible within 8 minutes time limit. An experienced pacer should accompany performers around the running area during the actual test. Performers should remain where they finished long enough for test administrators to record the distance covered. Ample time should be given for warm up as well as post-test cool down.



**Scoring:** The distance is measured in metres.



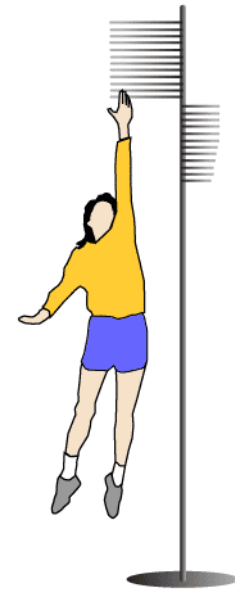


## Vertical jump

**Purpose:** To measure the Explosive power of the legs

**Equipment:** A smooth wall surface at least 5 metres high from the ground, Chalk, Measuring tape

**Procedure:** The subject was asked to stand with one side (right handed right side & left handed left side) towards the wall, heels together holding a piece of chalk in subject's hand. In this position the subject was asked to extend the hand as high as possible without raising the subject's heels and to make a mark on the wall. The subject was then asked to jump as high as possible and make another mark on the same wall, at the highest point of subject's jump.



**Scoring:** The distance between the normal reach mark and the maximum jump mark was measured to the nearest centimetres. Best of two trials was recorded as a subject's final score.

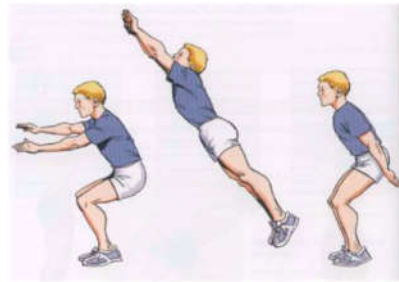


## Standing broad jump

**Purpose:** To measure Explosive power of the legs

**Equipment:** Gymnastic mat on floor or outdoor jumping pit, Measuring tape.

**Procedure:** The subject stands behind the take-off line with the feet several inches apart and toes just behind the line. In preparation for jumping, the subject swings the arms backward and bends the knees. The jump is accomplished by simultaneously extending the knees and by swinging the arms forward.



**Scoring:** The best of three trials in centimetres is recorded as the final score.



## Nelson's hand reaction test

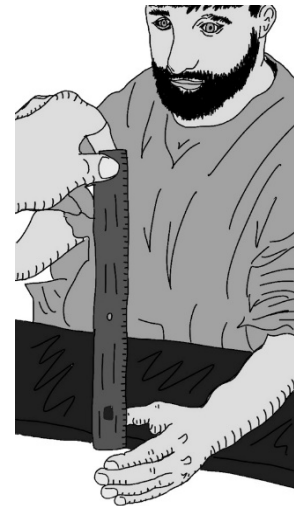
**Purpose:** To measure the speed of reaction with the hand response to a visual stimulus.

**Equipment:** Nelson's reaction timer, table / desk and chair, Stopwatch.

**Procedure:** The subjects was asked to sit with the forearm and hand resting comfortably on the table (or desk chair). The tips of the thumb and index finger were asked to be held in a ready to pinch position about 3 to 4 inches beyond the edge of the table. The upper edges of the thumb and index finger was positioned to be in a horizontal position. The scholar held the stick-timer near

the top, letting it hang between the subject's thumb and index finger with the baseline even with the upper surface of the subject's thumb.

The subject was directed to look at the concentration zone and as told to react for catching the stick, when it is released. The subject was asked neither to look at the tester's hand nor to move the hands up or down while attempting to catch the falling stick. Twenty trials were given. Each drop was preceded by a preparatory command of "ready".



**Scoring:** When the subject catches the stick, the score was read just above the upper edge of the thumb. The five slowest and the five fastest trials were discarded and an average of the middle ten is recorded as the score. The score was recorded to the nearest 1/100<sup>th</sup> of a second.





### 3.5 Reliability of the Data

Reliability of the data was ensured by tester's competency and instrument reliability.

#### 3.5.1 Tester's Competency

All the measurements on the different selected Physical fitness and Postural deformities variables in this study were taken by the scholar with the help of assistants. From the research point of view, it is very important to be familiar in using the various instrument and hence, the scholar had undergone training under an expert, in order to ensure the reliability of measurements taken. After a series of practice sessions, the tester's competency was statistically analysed and established by using the test-retest method and is presented in Table 7. Since, the correlation coefficient values were very high, the tester's competency in taking measurements were accepted.

**Table 7**

*Coefficient of correlation done on the test-retest method to ascertain the competency of the tester*

Sl. No.	Tests, Methods & Variables Tested	Coefficient of correlation
1.	Scoliosis (New York state posture test)	0.94
2.	Kyphosis (New York state posture test)	0.98
3.	Lordosis (New York state posture test)	0.95
4.	Round shoulders (New York state posture test)	0.97
5.	Bow legs (New York state posture test)	0.99
6.	Knock knees (New York state posture test)	0.99
7.	Claw foot (Foot print test)	0.95
8.	Flat foot (Foot print test)	0.97
9.	Speed {50 mts. Dash (Flying start)}	0.98
10.	Agility (4x10 mts. Shuttle run)	0.98
11.	Static balance (Stork stand test)	0.99

Sl. No.	Tests, Methods & Variables Tested	Coefficient of correlation
12.	Dynamic balance (Johnson's modified bass test)	0.97
13.	Movement time (Nelson's hand and arm reaction test)	0.95
14.	Flexibility {(Trunk & Back) Sit and reach test}	0.99
15.	Ankle flexibility (Goniometer)	0.96
16.	Abdominal strength (Sit-ups in one minute)	0.99
17.	Coordination (8 figure Duck test)	0.98
18.	Endurance (Cooper's 8-minute Run)	0.99
19.	Explosive power I (Vertical jump test)	0.99
20.	Explosive power II (Standing broad jump)	0.99
21.	Reaction time (Nelson's hand reaction test)	0.95

### 3.5.2 Instrument Reliability

The instrument such as stop watches, Plump line, test box, Goniometer etc. for measuring Postural deformities & Physical fitness variables were all having ISI standard and manufactured by reputed companies and being used in research laboratories. Thus, the instrument used in this study were reliable enough for the purpose of the study.

### 3.6 Statistical Techniques

Various descriptive profiles like mean, median, mode, standard deviation, variance, skewness, kurtosis, standard error of skewness, standard error of kurtosis, range, minimum score, maximum score, 25<sup>th</sup> percentile, 50<sup>th</sup> percentile and 75<sup>th</sup> percentile of boys and girls of the four age groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls was statistically analysed separately on the selected thirteen physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time.

Data collected from the various groups were statistically examined for significant difference in means by applying two way analysis of variance (two way ANOVA) to compare all the thirteen different selected physical fitness namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time across the four age groups and the three types of school.

Later the LSD (equivalent to no adjustments) post-hoc test was done on those variables in which F-ratio's will be significant, in order to verify whether the difference really exist or not for which the level of significance was set at 0.05.

T-ratio was used to compare all the thirteen different selected physical fitness namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time across gender.

Chi-square was done to find out the association of Postural deformities to different selected groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls.

Factor analysis (principal component analysis) was done to find out prominent factors comprising of anyone or all of the selected physical fitness variables among selected eight groups separately. The unloaded factors obtained will be then rotated by varimax method to find the final solution.

Percentile norms was constructed on those prominent physical fitness variables extracted after factor analysis for eight different groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls.

The level of significance for making inferences was set at 0.05.

# Chapter IV

## **Analysis and Interpretations**

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#### **4.1 Descriptive Analysis**

Various descriptive profiles like mean, median, standard deviation, variance, skewness, standard error of skewness, kurtosis, standard error of kurtosis, range, minimum score, maximum score, 25<sup>th</sup>, 50<sup>th</sup> and 75<sup>th</sup> percentile on the selected thirteen physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time were done on ten groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys, Under 17 year girls, Boys (as a single group irrespective of age) and Girls (as a single group irrespective of age) and is presented in table 8, 9,10, 11, 12,13,14,15,16 and 17 respectively.

**Table 8***Descriptive Analysis done on Physical fitness variables of Under 14 Year boys of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	11.6927	11.7	0.40566	0.165	0.807	0.141	-0.26	0.281	1.3	11.2	12.5	11.4	11.7	11.8
Agility	300	20.23	20	1.284	1.649	-0.361	0.141	-0.91	0.281	5	17	22	19	20	21
Static Balance	300	3.829	3.8	0.247	0.061	0.134	0.141	-1.19	0.281	0.8	3.5	4.3	3.6	3.8	4
Dynamic Balance	300	45.12	45	3.105	9.642	-0.095	0.141	-1.22	0.281	10	40	50	43	45	48
Movement Time	300	35.98	36	3.304	10.919	0.03	0.141	-1.33	0.281	10	31	41	33	36	39
Flexibility	300	30.25	30	4.684	21.939	0.11	0.141	-0.7	0.281	17	22	39	27	30	33
Ankle Flexibility	300	15.39	15	1.503	2.258	.041	.141	.536	.281	6	12	18	14	15	16
Abdominal Strength	300	34.44	34	5.974	35.686	0.217	0.141	-1.21	0.281	21	25	46	29	34	40
Coordination	300	20.098	20	0.9581	0.918	0.672	0.141	-0.63	0.281	2.9	19.1	22	19.1	20	20.5
Endurance	300	2134.33	2100	168.57	28415.94	0.415	0.141	-1.3	0.281	600	1900	2500	2000	2100	2300
Explosive Power 1	300	54.93	55	1.409	1.985	-0.388	0.141	-0.87	0.281	5	52	57	54	55	56
Explosive Power 2	300	123.74	123	1.678	2.817	0.503	0.141	-0.26	0.281	7	121	128	123	123	125
Reaction Time	300	35.98	36	3.304	10.919	0.03	0.141	-1.33	0.281	10	31	41	33	36	39

**Table 9***Descriptive Analysis done on Physical fitness variables of Under 14 Year girls of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	12.8	12.7	0.4	0.168	0.73	0.14	0.99	0.28	1.9	12.1	14	12.5	12.7	13
Agility	300	20.8	21	1.1	1.29	-0.1	0.14	-0.5	0.28	4	19	23	20	21	21
Static Balance	300	3.83	3.8	0.2	0.061	0.13	0.14	-1.2	0.28	0.8	3.5	4.3	3.6	3.8	4
Dynamic Balance	300	33.3	33	1.9	3.53	-0.2	0.14	-0.9	0.28	6	30	36	32	33	35
Movement Time	300	40.4	40	3	9.235	0.4	0.14	-1.1	0.28	10	36	46	38	40	43
Flexibility	300	25.5	26	3.6	12.95	-0.1	0.14	-1.5	0.28	11	20	31	22	26	29
Ankle Flexibility	300	15.75	16	1.228	1.508	.472	0.14	.679	0.28	4	14	18	15	16	16
Abdominal Strength	300	24.5	25	5.6	31.25	-0.1	0.14	-1.2	0.28	19	15	34	19.3	25	29
Coordination	300	19.8	19.9	0.7	0.553	-0.7	0.14	0.27	0.28	2.8	18.2	21	19.5	19.9	20.3
Endurance	300	1656	1700	105	11038	-0.5	0.14	-0.1	0.28	400	1400	1800	1600	1700	1700
Explosive Power 1	300	47.9	48	2	4.042	0.24	0.14	-0.6	0.28	8	44	52	46	48	49
Explosive Power 2	300	116	117	2.4	5.846	-0.4	0.14	-0.7	0.28	9	111	120	115	117	118
Reaction Time	300	40.4	40	3	9.235	0.4	0.14	-1.1	0.28	10	36	46	38	40	43

**Table 10***Descriptive Analysis done on Physical fitness variables of Under 15Year boys of Nilgiri District*

	N	Mean	Std. Error of Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
														25	50	75
Speed	300	11.5628	0.0143	11.5	0.2473	0.061	0.535	0.141	-0.544	0.281	0.8	11.2	12	11.4	11.5	11.6
Agility	300	18.9	0.066	19	1.149	1.321	-0.362	0.141	-1.441	0.281	3	17	20	18	19	20
Static Balance	300	4.14	0.0091	4.2	0.1569	0.025	-0.61	0.141	-0.356	0.281	0.6	3.8	4.4	4	4.2	4.3
Dynamic Balance	300	45.13	0.173	46	2.997	8.983	-0.364	0.141	-0.668	0.281	11	39	50	43	46	48
Movement Time	300	32.12	0.259	31	4.494	20.197	0.251	0.141	-1.207	0.281	15	25	40	28	31	36
Flexibility	300	31.17	0.162	31	2.805	7.87	-0.06	0.141	-0.832	0.281	10	26	36	29	31	33
Ankle Flexibility	300	15.74	.074	16	1.283	1.646	.244	.141	1.066	0.281	4	14	18	15	16	17
Abdominal Strength	300	35.77	0.374	36	6.475	41.928	-0.047	0.141	-1.181	0.281	22	25	47	30	36	42
Coordination	300	20.214	0.0542	20.1	0.9381	0.88	0.359	0.141	-0.617	0.281	3.3	18.8	22.1	19.7	20.1	21
Endurance	300	2262.67	12.021	2300	208.21	43351	-0.392	0.141	-0.801	0.281	700	1900	2600	2100	2300	2400
Explosive Power 1	300	54.48	0.111	55	1.915	3.669	-0.344	0.141	-0.973	0.281	6	51	57	53	55	56
Explosive Power 2	300	126.17	0.098	126	1.702	2.897	-0.157	0.141	-0.785	0.281	6	123	129	125	126	128
Reaction Time	300	32.12	0.259	31	4.494	20.197	0.251	0.141	-1.207	0.281	15	25	40	28	31	36



**Table 11***Descriptive Analysis done on Physical fitness variables of Under 15Year girls of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	12.5	12.6	0.354	0.126	0.344	0.141	-0.64	0.281	1.2	12	13.2	12.3	12.6	12.6
Agility	300	20.3	20	0.642	0.412	-0.452	0.141	-0.69	0.281	2	19	21	20	20	21
Static Balance	300	3.87	3.8	0.271	0.073	0.317	0.141	-1.22	0.281	0.9	3.5	4.4	3.7	3.8	4.1
Dynamic Balance	300	34.1	34	2.137	4.565	-0.324	0.141	-1	0.281	7	30	37	32	34	36
Movement Time	300	39.5	40	3.298	10.877	-0.23	0.141	-0.89	0.281	12	33	45	37	40	42
Flexibility	300	25.8	25	3.66	13.395	0.086	0.141	-1.32	0.281	12	20	32	23	25	29
Ankle Flexibility	300	15.62	16	1.140	1.299	.423	0.141	.478	0.281	4	14	18	15	16	16
Abdominal Strength	300	25.2	26	5.718	32.699	-0.166	0.141	-1.01	0.281	21	14	35	20.25	26	30
Coordination	300	20.4	20.3	0.985	0.971	0.365	0.141	-1.17	0.281	2.8	19.2	22	19.4	20.3	21.1
Endurance	300	1591	1600	102.7	10548	0.188	0.141	-0.71	0.281	400	1400	1800	1500	1600	1700
Explosive Power 1	300	46.2	46	1.388	1.926	-0.077	0.141	-0.76	0.281	5	44	49	45	46	47
Explosive Power 2	300	118	118	2.573	6.621	-0.11	0.141	-0.51	0.281	10	113	123	117	118	120
Reaction Time	300	39.5	40	3.298	10.877	-0.23	0.141	-0.89	0.281	12	33	45	37	40	42

**Table 12***Descriptive Analysis done on Physical fitness variables of Under 16 Year boys of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Sum	Percentiles		
														25	50	75
Speed	300	11.6	11.7	0.484	0.234	0.05	0.141	-1.176	0.281	1.5	10.9	12.4	3472.4	11.1	11.7	11.9
Agility	300	18.3	18	0.669	0.447	0.87	0.141	0.852	0.281	3	17	20	5487	18	18	19
Static Balance	300	4.3	4.3	0.224	0.05	0.17	0.141	-1.252	0.281	0.7	4	4.7	1290.1	4.1	4.3	4.5
Dynamic Balance	300	45.6	45	3.917	15.34	0.07	0.141	-1.052	0.281	14	39	53	13677	42	45	49
Movement Time	300	29.6	30	3.975	15.799	-0.11	0.141	-1.16	0.281	13	23	36	8889	26	30	33
Flexibility	300	34.1	34	4.341	18.84	0.097	0.141	-1.075	0.281	15	27	42	10238	30	34	37
Ankle Flexibility	300	15.82	16	1.282	1.64	.095	.141	1.08	.281	4	14	18	4747	15	16	17
Abdominal Strength	300	35.8	36	6.59	43.422	-0.1	0.141	-1.082	0.281	23	24	47	10738	30.25	36	41
Coordination	300	20	20	0.811	0.657	0.805	0.141	0.36	0.281	3.2	18.9	22.1	6012.5	19.5	20	20.4
Endurance	300	2232	2200	180.8	32696.88	-0.11	0.141	-1.172	0.281	600	1900	2500	669700	2100	2200	2400
Explosive Power 1	300	53.9	54	1.312	1.721	0.204	0.141	-1.098	0.281	4	52	56	16160	53	54	55
Explosive Power 2	300	130	130	1.644	2.703	-0.03	0.141	-0.289	0.281	7	127	134	39088	129	130	131
Reaction Time	300	29.6	30	3.975	15.799	-0.11	0.141	-1.16	0.281	13	23	36	8889	26	30	33

**Table 13***Descriptive Analysis done on Physical fitness variables of Under 16Year girls of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	12.7	12.7	0.3208	0.103	-0.75	0.141	-0.19	0.281	1.2	12	13.2	12.6	12.7	12.9
Agility	300	19.9	20	0.477	0.228	-0.32	0.141	1.042	0.281	2	19	21	20	20	20
Static Balance	300	4.13	4.1	0.2363	0.056	-0.19	0.141	-0.88	0.281	0.8	3.7	4.5	4	4.1	4.3
Dynamic Balance	300	36.8	37	2.906	8.447	0.073	0.141	-1.01	0.281	10	32	42	34	37	39
Movement Time	300	33.2	33	3.395	11.529	0.008	0.141	-1.16	0.281	11	28	39	30	33	36
Flexibility	300	27.9	28	4.145	17.178	-0.02	0.141	-1.14	0.281	14	21	35	24	28	31
Ankle Flexibility	300	16.26	16	1.209	1.462	.081	0.141	1.073	0.281	4	14	18	15	16	17
Abdominal Strength	300	26.3	26.5	6.568	43.142	-0.03	0.141	-1.2	0.281	22	15	37	21	26.5	32
Coordination	300	20	20	0.6614	0.437	-0.02	0.141	-1	0.281	2.3	18.7	21	19.4	20	20.8
Endurance	300	1627	1600	101.02	10205	-0.27	0.141	-0.5	0.281	400	1400	1800	1600	1600	1700
Explosive Power 1	300	50.1	50	1.881	3.538	-0.19	0.141	-1.03	0.281	6	47	53	48	50	52
Explosive Power 2	300	120	120	2.165	4.688	-0.27	0.141	-0.71	0.281	8	116	124	119	120	122
Reaction Time	300	33.2	33	3.395	11.529	0.008	0.141	-1.16	0.281	11	28	39	30	33	36

**Table 14***Descriptive Analysis done on Physical fitness variables of Under 17 Year boys of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	10.6	10.6	0.3	0.09	0.153	0.141	-0.93	0.28	1.1	10.1	11.2	10.4	10.6	10.9
Agility	300	17.9	18	1.26	1.59	0.074	0.141	-1.13	0.28	4	16	20	17	18	19
Static Balance	300	4.66	4.6	0.3	0.09	0.185	0.141	-1.12	0.28	1	4.2	5.2	4.4	4.6	4.9
Dynamic Balance	300	48.1	48	5.08	25.8	0.106	0.141	-1.2	0.28	17	40	57	44	48	53
Movement Time	300	23.8	24	4.09	16.8	-0.22	0.141	-1.15	0.28	14	16	30	20	24	28
Flexibility	300	35.3	34	5.74	32.9	0.201	0.141	-1.42	0.28	18	27	45	30	34	41
Ankle Flexibility	300	16.26	16	1.318	1.737	.253	.141	1.097	0.28	4	14	18	15	16	17
Abdominal Strength	300	38.8	40	8.14	66.2	-0.12	0.141	-1.31	0.28	26	25	51	31.3	40	46
Coordination	300	20	20.1	0.65	0.43	-0.26	0.141	-0.74	0.28	2.2	18.8	21	19.7	20.1	20.5
Endurance	300	2405	2400	134	#####	-0.19	0.141	-1.05	0.28	400	2200	2600	2300	2400	2500
Explosive Power 1	300	54.9	55	1.8	3.24	0.402	0.141	-0.5	0.28	7	52	59	53	55	56
Explosive Power 2	300	134	134	1.78	3.16	0.112	0.141	-0.71	0.28	7	131	138	133	134	136
Reaction Time	300	23.8	24	4.09	16.8	-0.22	0.141	-1.15	0.28	14	16	30	20	24	28

**Table 15***Descriptive Analysis done on Physical Fitness variables of Under 17Year girls of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	300	12.52	12.6	0.38	0.142	-0.14	0.141	-1.47	0.28	1.3	11.9	13.2	12.1	12.6	12.9
Agility	300	19.54	20	0.5	0.249	-0.16	0.141	-1.99	0.28	1	19	20	19	20	20
Static Balance	300	4.278	4.2	0.35	0.121	0.22	0.141	-1.09	0.28	1.2	3.7	4.9	4	4.2	4.6
Dynamic Balance	300	40.55	41	4.52	20.4	-0.08	0.141	-1.23	0.28	15	33	48	36.3	41	45
Movement Time	300	31.51	32	2.96	8.766	-0.43	0.141	-1.2	0.28	9	26	35	29	32	34
Flexibility	300	30.01	29	5.23	27.31	0.073	0.141	-1.18	0.28	18	21	39	26	29	35
Ankle Flexibility	300	16.26	16	1.318	1.737	.253	0.141	1.097	0.28	4	14	15	15	16	17
Abdominal Strength	300	26.56	27	6.73	45.34	-0.03	0.141	-1.2	0.28	23	15	38	20	27	32
Coordination	300	19.87	19.8	0.6	0.361	0.568	0.141	-0.43	0.28	2	19	21	19.6	19.8	20.1
Endurance	300	1785	1800	113	12694	0.235	0.141	-0.67	0.28	400	1600	2000	1700	1800	1900
Explosive Power 1	300	51.05	51	1.27	1.599	-0.03	0.141	-1.07	0.28	4	49	53	50	51	52
Explosive Power 2	300	120.4	121	2.83	7.992	-0.28	0.141	-0.78	0.28	10	115	125	119	121	123
Reaction Time	300	31.51	32	2.96	8.766	-0.43	0.141	-1.2	0.28	9	26	35	29	32	34

**Table 16***Descriptive Analysis done on Physical fitness variables of boys irrespective of age of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	1200	11.37	11.5	0.562	0.316	-0.2	0.07	-0.445	0.14	2.4	10.1	12.5	11	11.5	11.8
Agility	1200	18.83	19	1.427	2.035	0.25	0.07	-0.481	0.14	6	16	22	18	19	20
Static Balance	1200	4.232	4.2	0.383	0.146	0.29	0.07	0.005	0.14	1.7	3.5	5.2	4	4.2	4.4
Dynamic Balance	1200	45.97	46	4.049	16.39	0.41	0.07	-0.265	0.14	18	39	57	43	46	49
Movement Time	1200	30.37	31	5.964	35.58	-0.2	0.07	-0.575	0.14	25	16	41	26	31	35
Flexibility	1200	32.72	32	4.966	24.67	0.4	0.07	-0.312	0.14	23	22	45	29	32	36
Ankle Flexibility	1200	15.80	16	1.383	1.913	.032	0.07	.831	0.14	6	12	18	15	16	17
Abdominal Strength	1200	36.21	36	7.018	49.25	0.13	0.07	-1.037	0.14	27	24	51	30	36	42
Coordination	1200	20.08	20	0.853	0.727	0.58	0.07	-0.172	0.14	3.3	18.8	22.1	19.5	20	20.5
Endurance	1200	2259	2300	199.9	39943	-0.2	0.07	-1.029	0.14	700	1900	2600	2100	2300	2400
Explosive Power 1	1200	54.54	55	1.681	2.826	0.03	0.07	-0.603	0.14	8	51	59	53	55	56
Explosive Power 2	1200	128.6	128	4.337	18.81	0.18	0.07	-1.038	0.14	17	121	138	125	128	132
Reaction Time	1200	30.37	31	5.964	35.58	-0.2	0.07	-0.575	0.14	25	16	41	26	31	35

**Table 17***Descriptive Analysis done on Physical fitness variables of girls irrespective of age of Nilgiri District*

	N	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum	Percentiles		
													25	50	75
Speed	1200	12.6	12.6	0.38	0.147	0.21	0.07	0.22	0.141	2.1	11.9	14	12.3	12.6	12.9
Agility	1200	20.2	20	0.88	0.776	0.74	0.07	0.78	0.141	4	19	23	20	20	21
Static Balance	1200	4.03	4	0.33	0.112	0.39	0.07	-0.33	0.141	1.4	3.5	4.9	3.7	4	4.3
Dynamic Balance	1200	36.2	35	4.15	17.2	0.92	0.07	0.34	0.141	18	30	48	33	35	38
Movement Time	1200	36.2	36	5	25.02	-0.04	0.07	-0.79	0.141	20	26	46	33	36	40
Flexibility	1200	27.3	27	4.57	20.91	0.37	0.07	-0.54	0.141	19	20	39	23	27	30
Ankle Flexibility	1200	15.95	16	1.279	1.635	.276	0.07	.796	0.141	5	14	19	15	16	17
Abdominal Strength	1200	25.6	26	6.22	38.7	-0	0.07	-1.07	0.141	24	14	38	20	26	31
Coordination	1200	20	19.9	0.79	0.63	0.4	0.07	0.22	0.141	3.8	18.2	22	19.5	19.9	20.6
Endurance	1200	1665	1700	128	16482	0.21	0.07	-0.07	0.141	600	1400	2000	1600	1700	1700
Explosive Power 1	1200	48.8	49	2.5	6.244	-0.09	0.07	-1.01	0.141	9	44	53	47	49	51
Explosive Power 2	1200	119	119	3	8.984	-0.17	0.07	-0.46	0.141	14	111	125	117	119	121
Reaction Time	1200	36.2	36	5	25.02	-0.04	0.07	-0.79	0.141	20	26	46	33	36	40

## 4.2 T-Ratio

Further, t-ratios were done to find out whether any significant differences exists in means on the selected thirteen Physical fitness variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time among boys and girls (irrespective of age and type of school) and is presented in table 18

**Table 18**

*Independent sample t-test done on Physical fitness variables among boys and girls of Nilgiri district irrespective of age and type of school*

	Boys (1200)		Girls(1200)		t	p
	Mean	SD	Mean	SD		
Speed	11.37	.56	12.63	.38	64.36*	0.001
Agility	18.83	1.43	20.15	.88	27.29*	0.001
Static Balance	4.23	.38	4.03	.33	13.913*	0.001*
Dynamic Balance	45.97	4.05	36.20	4.147	58.41*	0.001*
Movement Time	30.37	5.96	36.16	5.002	25.78*	0.001*
Flexibility	32.72	4.96	27.30	4.57	27.80*	0.001
Ankle Flexibility	15.80	1.383	15.95	1.279	2.713*	0.007*
Abdominal Strength	36.21	7.02	25.63	6.221	39.05*	0.001*
Coordination	20.08	.85	20.03	.79	1.502*	0.133
Endurance	2258.58	199.85	1664.67	128.38	86.61*	0.001*
Explosive Power 1	54.54	1.68	48.82	2.50	65.71*	0.001*
Explosive Power 2	128.60	4.34	118.81	2.99	64.32*	0.001*
Reaction Time	30.37	5.96	36.16	5.001	25.78*	0.001*

The above table, to test for difference in means of Speed among boys and girls irrespective of age and type of school, indicates a t-value of 64.36 which is significant at 0.05 level, as the p-value obtained was 0.001, which was much less than 0.05, the level of significance set for this study. Besides, since the mean of boys (11.37) is less



than girls (12.63) on Speed, the boys are said to have better Speed than girls.

Table 18 also indicates a significant t-value of 27.29 for Agility at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (18.83) is much less than girls (20.15) on Agility, boys are said to have better Agility than girls.

Apart from that, the above table to test for difference in means of Static balance among boys and girls irrespective of age and type of school, indicates a t-value of 13.913 which is significant at 0.05 level, as the p-value obtained was 0.001, which was much less than 0.05. Besides, since the mean of boys (4.23) is greater than girls (4.03) on Static balance, the boys are said to have better Static balance than girls.

Besides, Table 18 also indicates a significant t-value of 58.41 for Dynamic balance at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (45.97) is much greater than girls (36.20) on Dynamic balance, boys are said to have better Dynamic balance than girls.

Table 18 also indicates a significant t-value of 25.78 for Movement time at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (30.37) is much less than girls (36.16) on Movement time, boys are said to have better Movement time than girls.

Apart from that, the above table 18 to test for difference in mean Flexibility among boys and girls irrespective of age and type of school, indicates a t-value of 27.80 which is significant at 0.05 level, as the p-value obtained was 0.001, which was much less than 0.05. Besides, since the mean of boys (32.72) is much greater than girls (27.30) on Flexibility, the boys are said to have better Flexibility than girls.

Table 18 also indicates a significant t-value of 2.713 for Ankle flexibility at 0.05 level as the p-value of 0.007 is much less than 0.05. Since the mean of girls (15.95) is much greater than boys (15.80) on Ankle flexibility, girls are said to have better Ankle flexibility than boys.

Besides, Table 18 also indicates a significant t-value of 39.05 for Abdominal strength at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (36.21) is much greater than girls (25.63) on Abdominal strength, boys are said to have better Abdominal strength than girls.

Apart from that, the above table to test for difference in mean of Endurance among boys and girls irrespective of age and type of school, indicates a t-value of 86.61 which is significant at 0.05 level, as the p-value obtained was 0.001, which was much less than 0.05. Besides, since the mean of boys (2258.58) is much greater than girls (1664.67) on Endurance, the boys are said to have better Endurance than girls.

Besides, Table 18 also indicates a significant t-value of 65.71 for Explosive power 1 at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (54.54) is much greater than girls (48.82) on Explosive power 1, boys are said to have better Explosive power 1 than girls.

Table 18 also indicates a significant t-value of 64.32 for Explosive power 2 at 0.05 level as the p-value of 0.001 is much less than 0.05. Since the mean of boys (128.60) is much greater than girls (118.81) on Explosive power 2, boys are said to have better Explosive power 2 than girls.

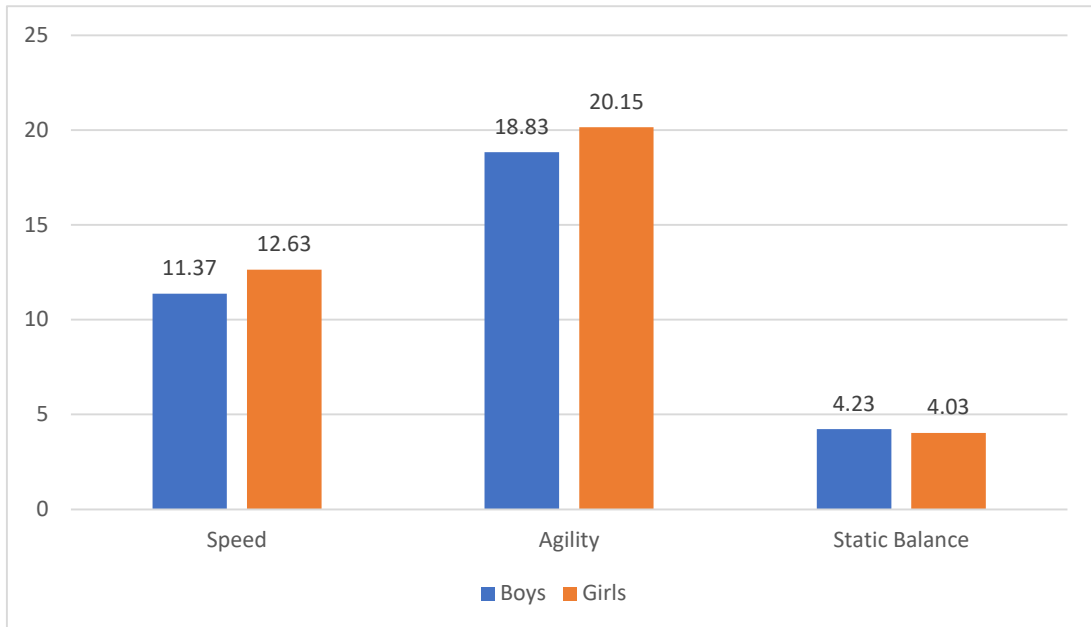
Apart from that, the above table to test for difference in mean of Reaction time among boys and girls irrespective of age and type of school, indicates a t-value of 25.78 which is significant at 0.05 level, as the p-value obtained was 0.001, which was much less than 0.05. Besides, since the mean of boys (30.37) is less than girls (36.16) on Reaction time, the boys are said to have better Reaction time than girls.

On the other hand, no significant difference in means were found on Coordination among boys and girls irrespective of age and type of school, which indicates a t-value of 1.502 which was not significant at 0.05 level, as the p-value obtained was 0.133, which was much higher than 0.05. Hence, this indicates that, no difference do exist on Coordination among boys and girls irrespective of age and type of school.

A graphical representation of mean difference on Speed, Agility and Static balance among boys and girls irrespective of age and type of school is shown in Figure 4, while that for Dynamic balance, Movement time and Flexibility is shown in Figure 5, that for Ankle flexibility, Abdominal strength and Endurance is shown in Figure 6 and that for Explosive power 1, Explosive power 2 and Reaction time is shown in Figure 7 respectively.

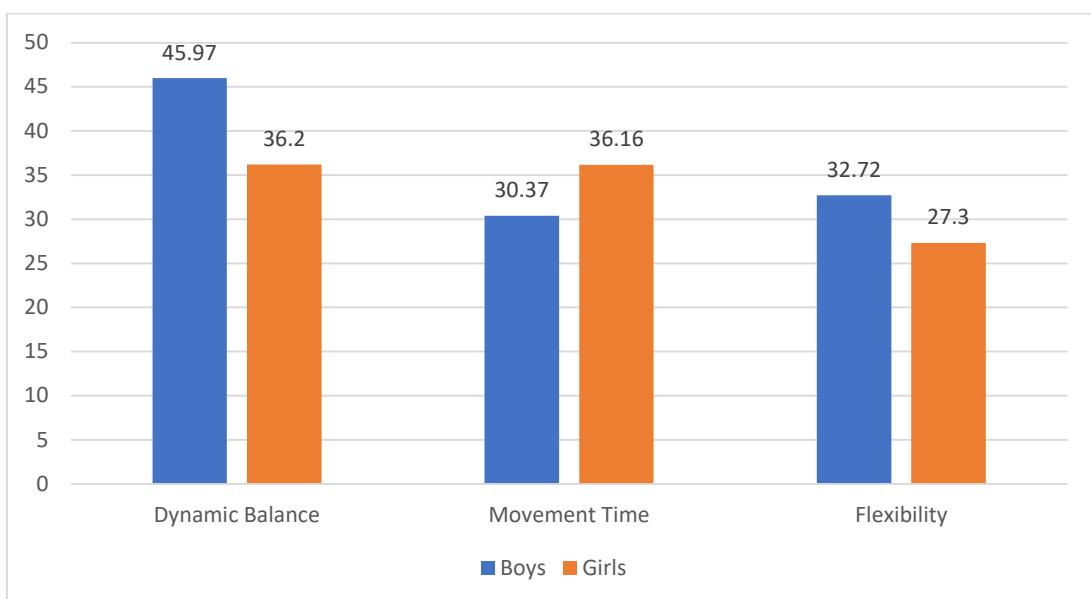
**Figure 4**

*Graphical representation of means on Speed, Agility and Static balance among boys and girls irrespective of age and type of school*



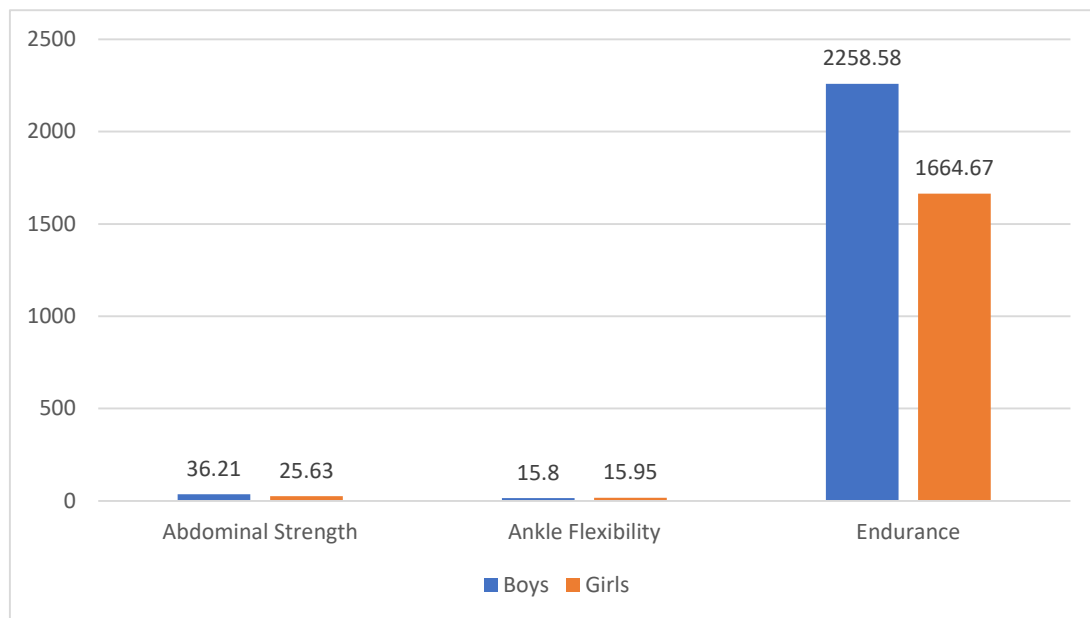
**Figure 5**

*Graphical representation of means on Dynamic balance, Movement time and Flexibility among boys and girls irrespective of age and type of school*



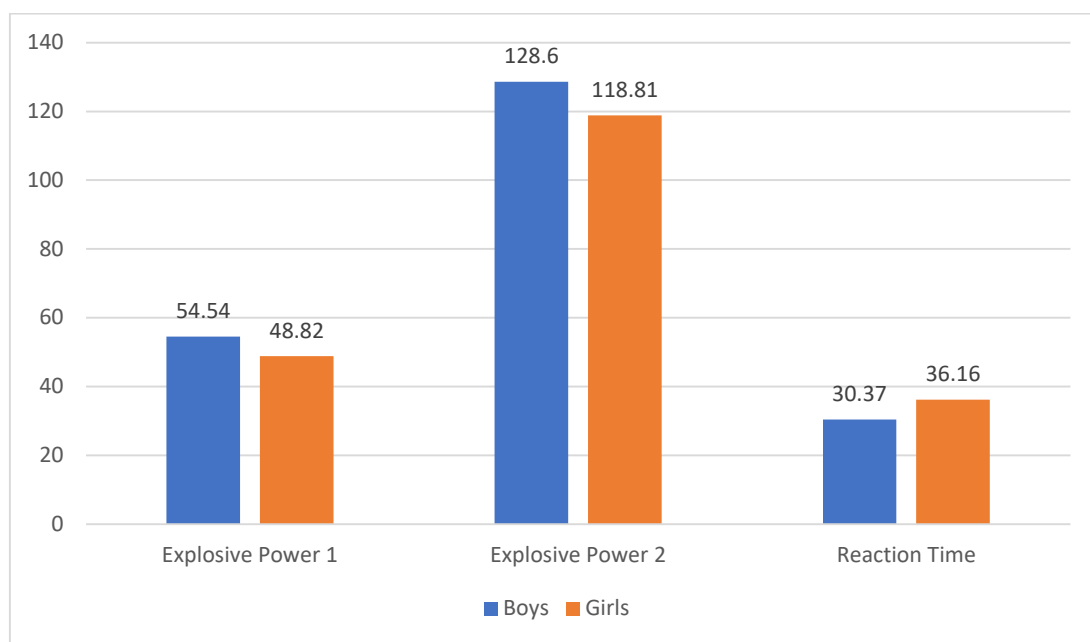
**Figure 6**

*Graphical representation of means on Ankle flexibility, Abdominal strength and Endurance among boys and girls irrespective of age and type of school*



**Figure 7**

*Graphical representation of means on Explosive power 1, Explosive 2 and Reaction time among boys and girls irrespective of age and type of school*

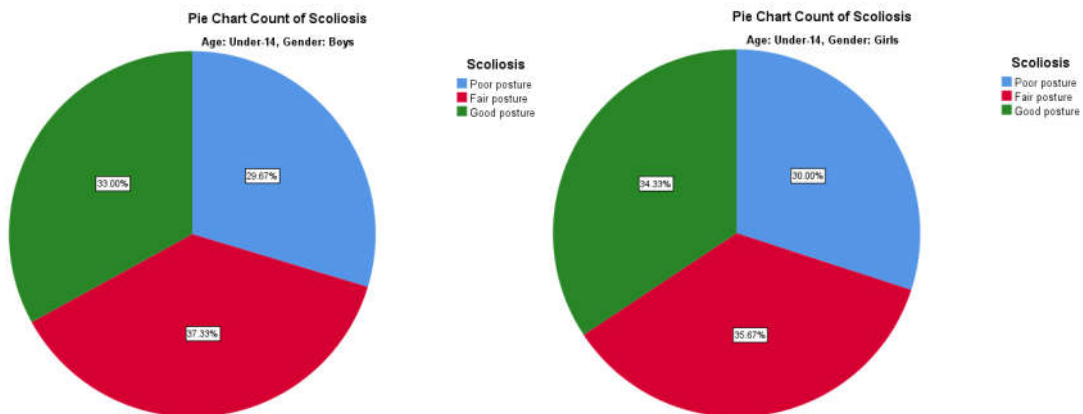


The selected eight postural deformities such as Scoliosis, Kyphosis, Lordosis, Round Shoulder, Bow Leg, Knock Knee, Claw Foot and Flat Foot are evaluated and classified into three, namely, Poor, Fair and Good depending on the score. Later percent analysis was done based on the classification into poor, fair and good on eight age and gender groups irrespective of the type of school such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls.

The graphical representation of the percent analysis of Scoliosis among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 8, 9, 10 and 11 respectively.

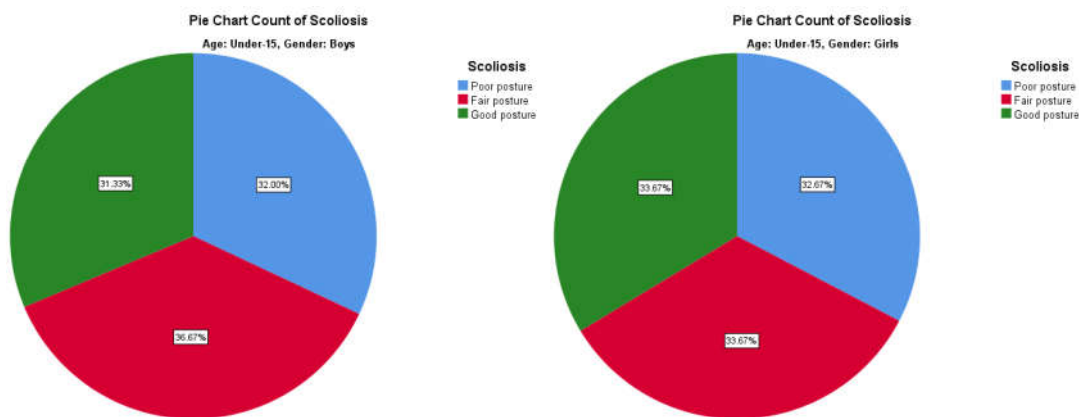
**Figure 8**

*Pie chart showing the percentage of Scoliosis among Under 14 year boys and Under 14 years girls irrespective of the type of school*



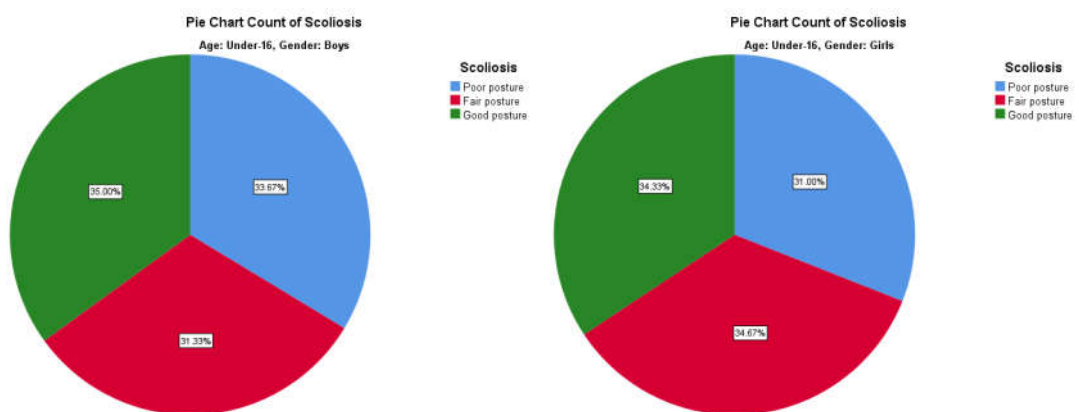
**Figure 9**

*Pie chart showing the percentage of Scoliosis among Under 15-year boys and Under 15 years girls irrespective of the type of school*



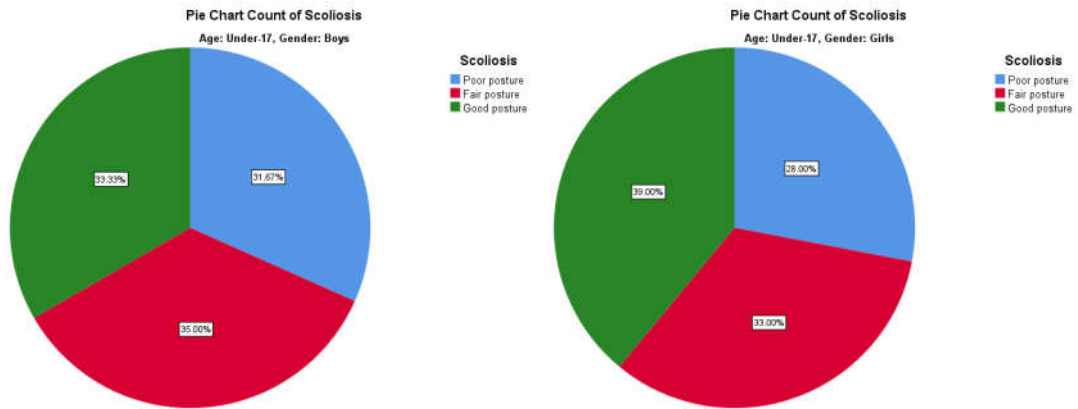
**Figure 10**

*Pie chart showing the percentage of Scoliosis among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 11**

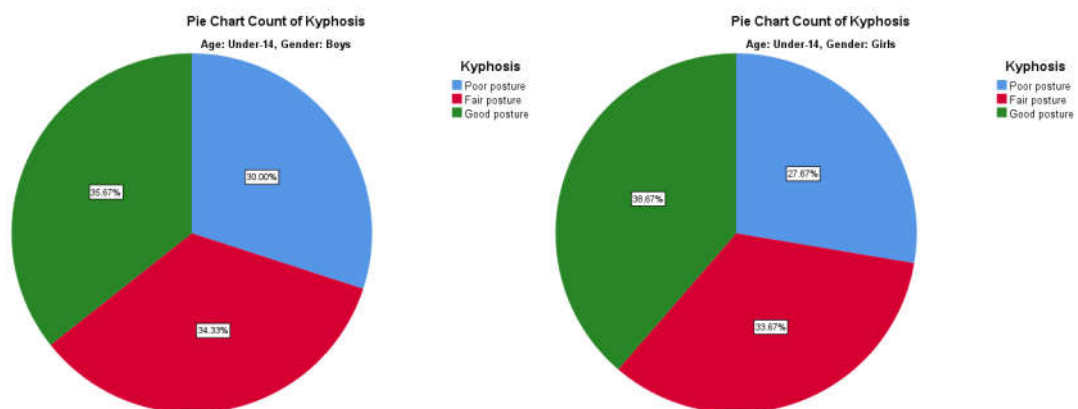
*Pie chart showing the percentage of Scoliosis among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the count of Kyphosis among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 12, 13, 14 and 15 respectively.

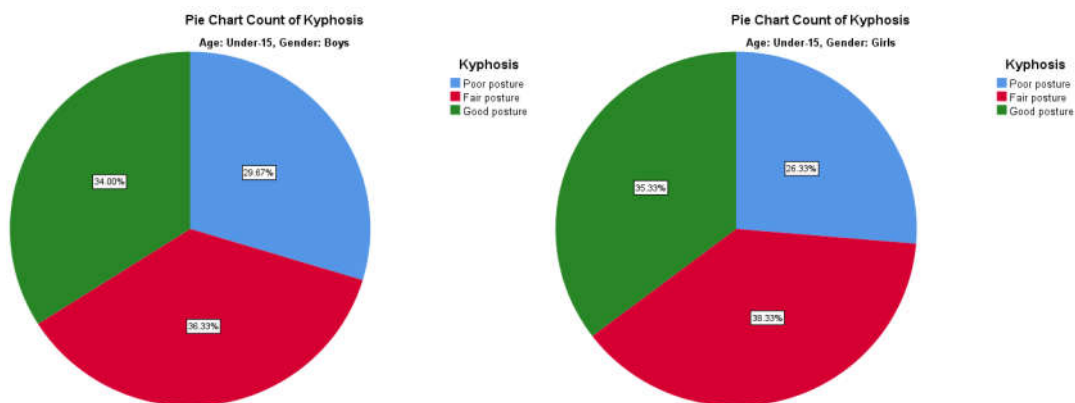
**Figure 12**

*Pie chart showing the percentage of Kyphosis among Under 14 year boys and Under 14 years girls irrespective of the type of school*



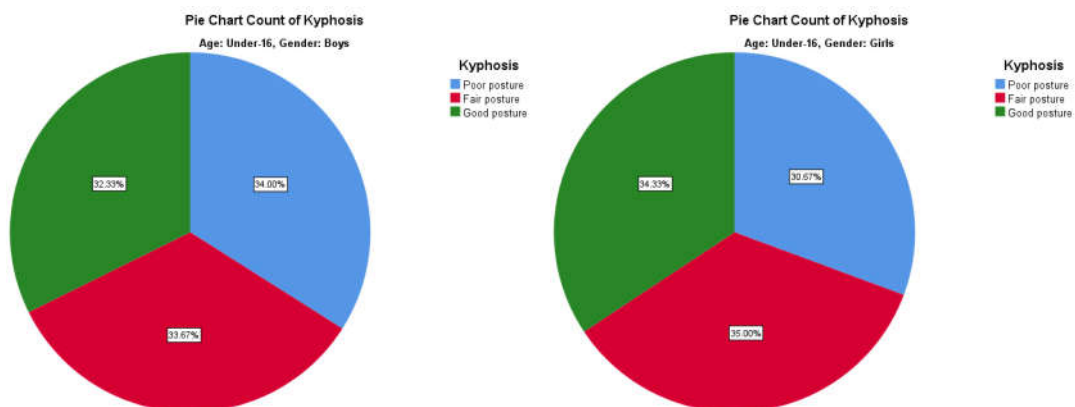
**Figure 13**

*Pie chart showing the percentage of Kyphosis among Under 15 year boys and Under 15 years girls irrespective of the type of school*



**Figure 14**

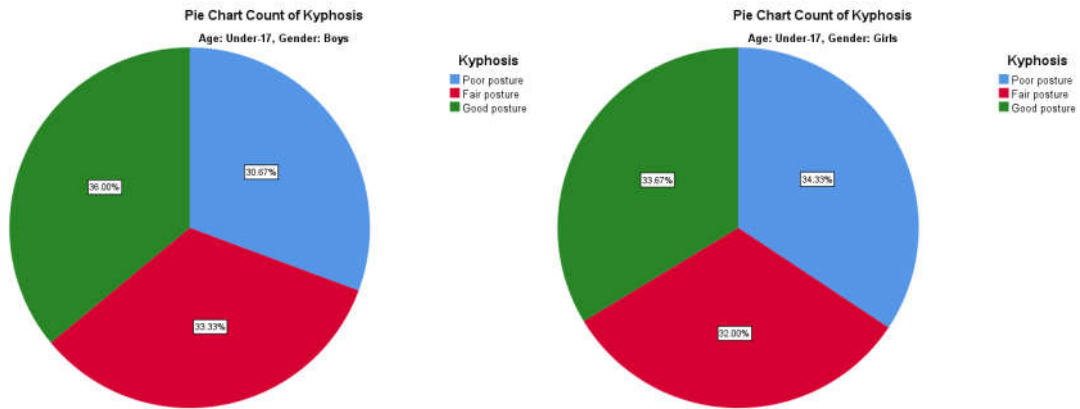
*Pie chart showing the percentage of Kyphosis among Under 16 year boys and Under 16 years girls irrespective of the type of school*





**Figure 15**

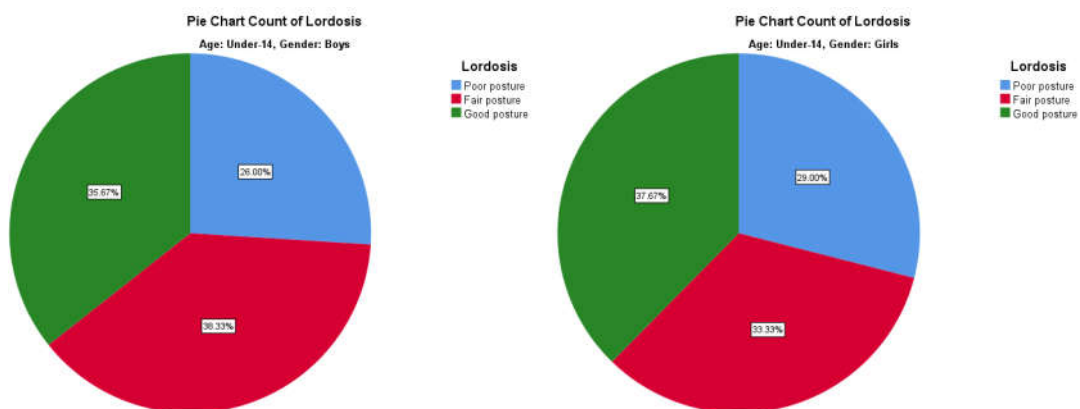
*Pie chart showing the percentage of Kyphosis among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Lordosis among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 16, 17, 18 and 19 respectively.

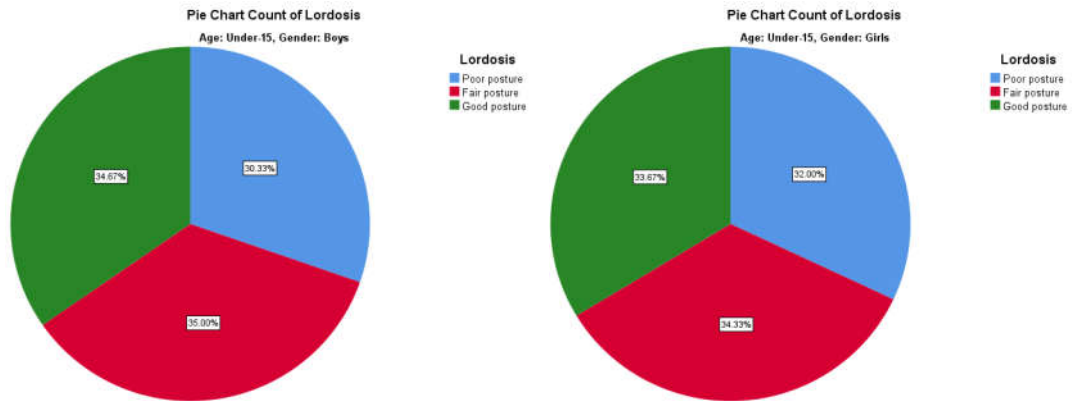
**Figure 16**

*Pie chart showing the percentage of Lordosis among Under 14 year boys and Under 14 years girls irrespective of the type of school*



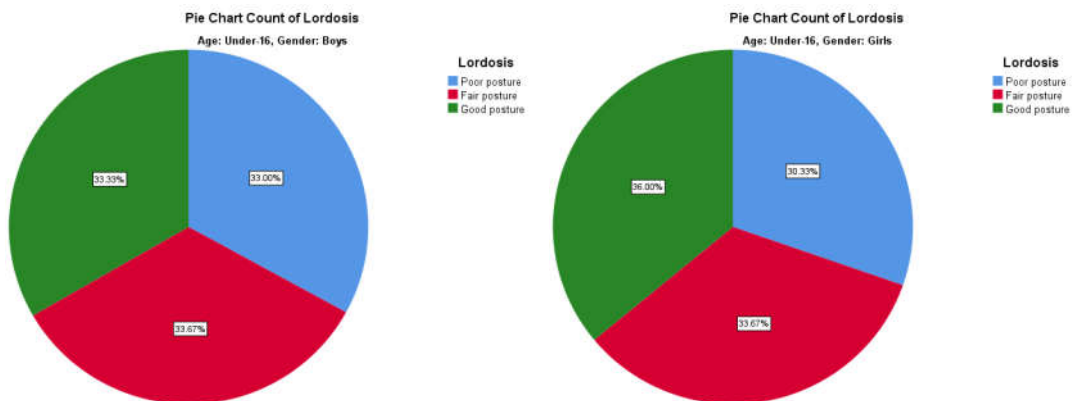
**Figure 17**

*Pie chart showing the percentage of Lordosis among Under 15 year boys and Under 15 years girls irrespective of the type of school*



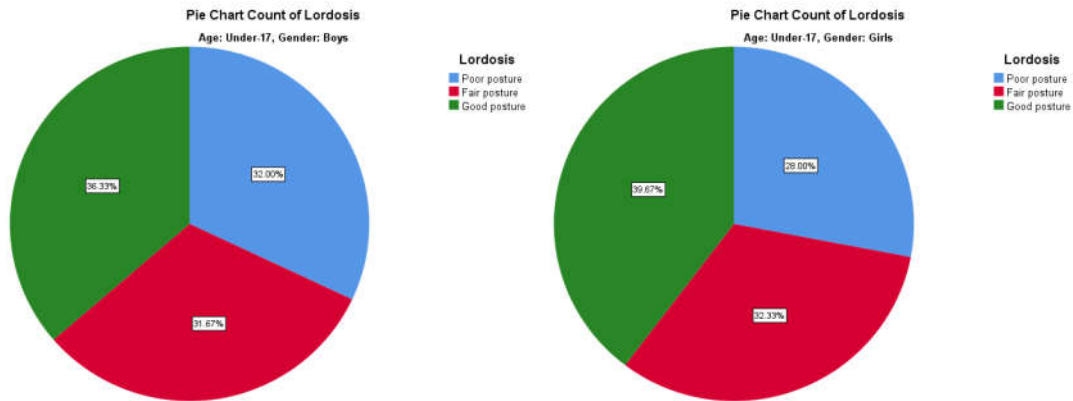
**Figure 18**

*Pie chart showing the percentage of Lordosis among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 19**

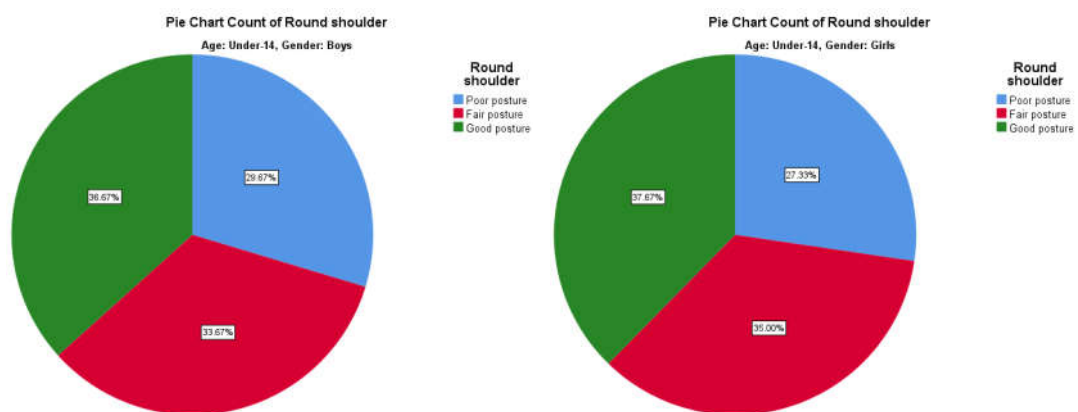
*Pie chart showing the percentage of Lordosis among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Rounder shoulder among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 20, 21, 22 and 23 respectively.

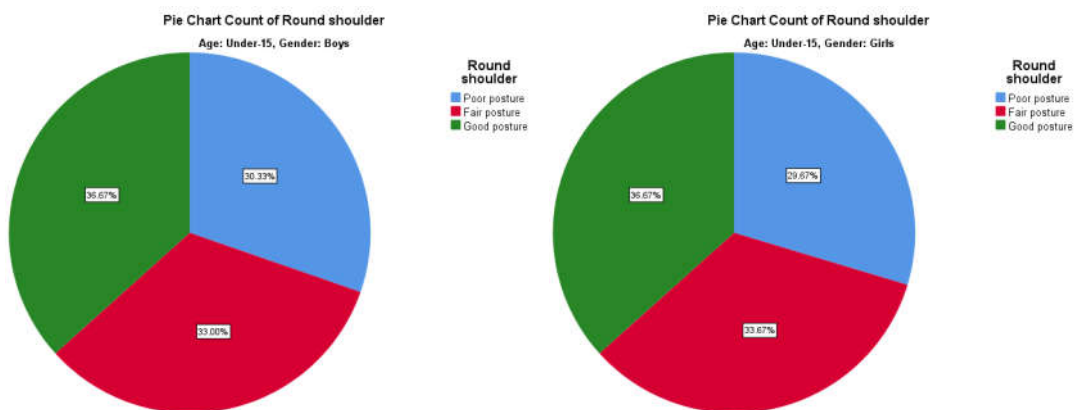
**Figure 20**

*Pie chart showing the percentage of Round shoulder among Under 14 year boys and Under 14 years girls irrespective of the type of school*



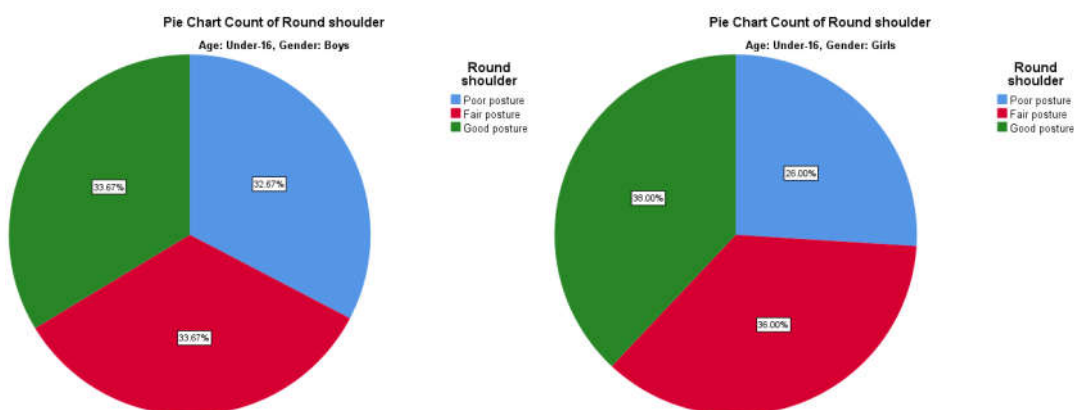
**Figure 21**

*Pie chart showing the percentage of Round shoulder among Under 15 year boys and Under 15 years girls irrespective of the type of school*



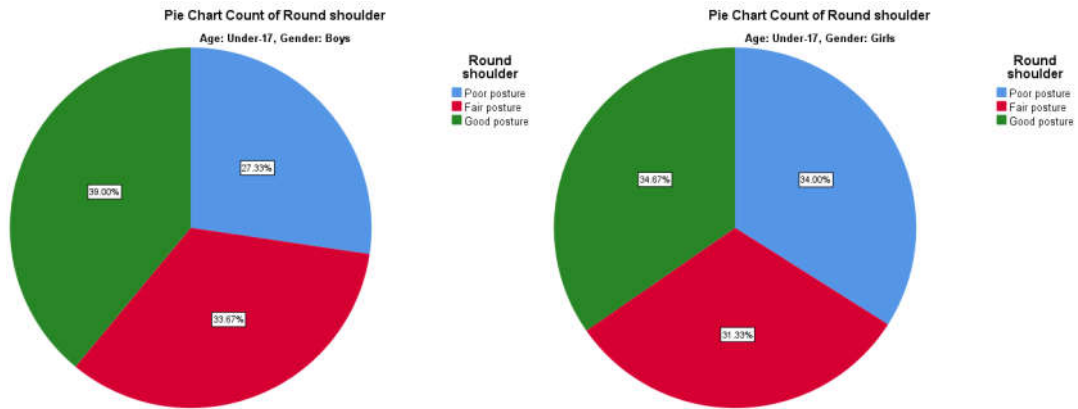
**Figure 22**

*Pie chart showing the percentage of Round shoulder among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 23**

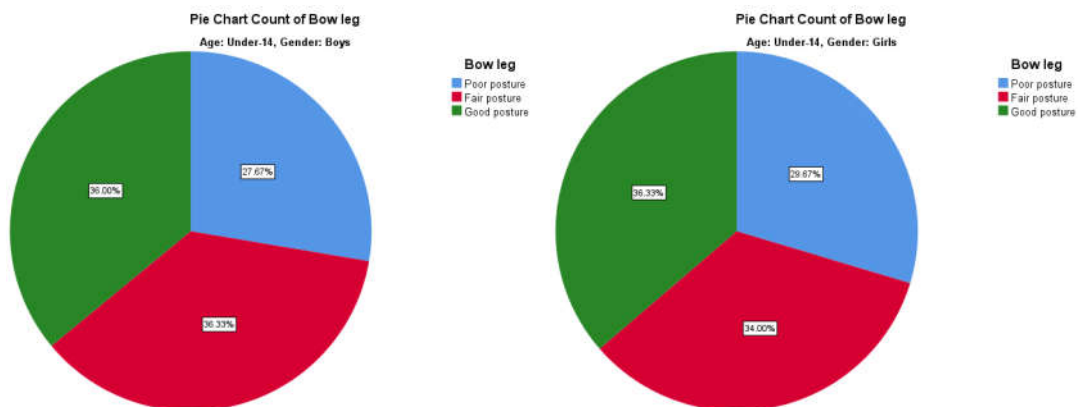
*Pie chart showing the percentage of Round shoulder among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Bow leg among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 24, 25, 26 and 27 respectively.

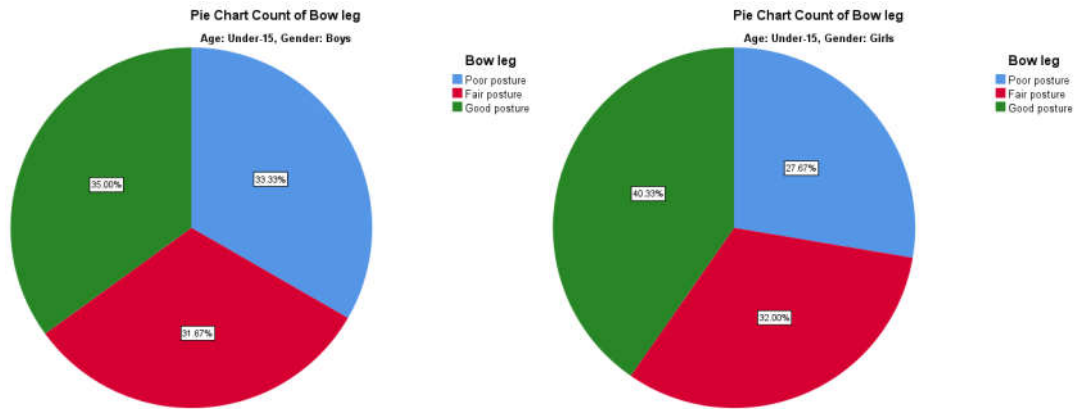
**Figure 24**

*Pie chart showing the percentage of Bow Leg among Under 14 year boys and Under 14 years girls irrespective of the type of school*



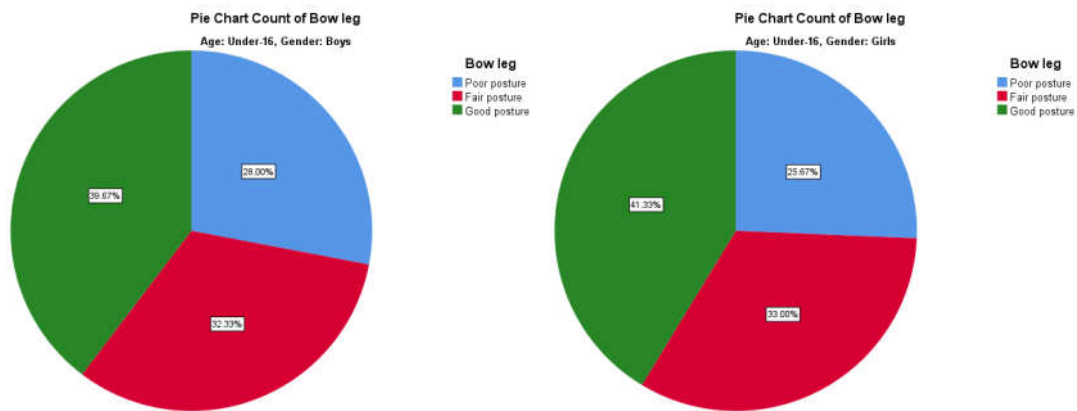
**Figure 25**

*Pie chart showing the percentage of Bow Leg among Under 15 year boys and Under 15 years girls irrespective of the type of school*



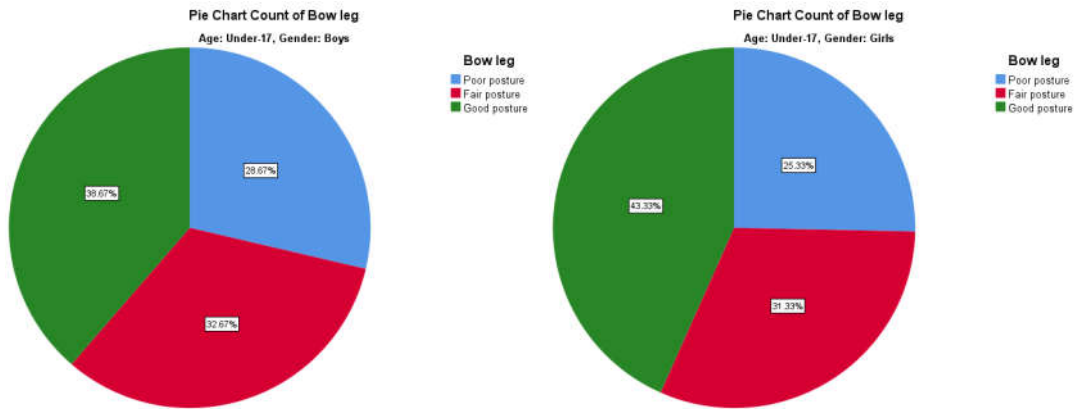
**Figure 26**

*Pie chart showing the percentage of Bow Leg among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 27**

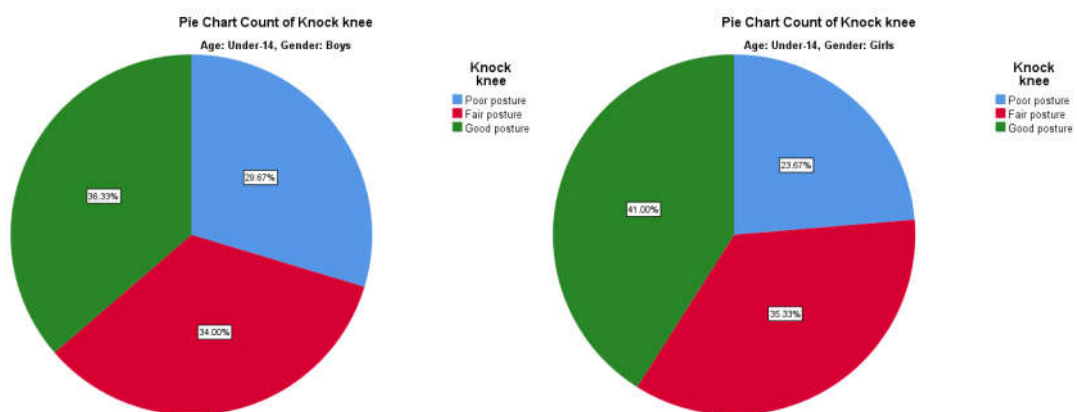
*Pie chart showing the percentage of Bow Leg among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Knock knee among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 28, 29, 30 and 31 respectively.

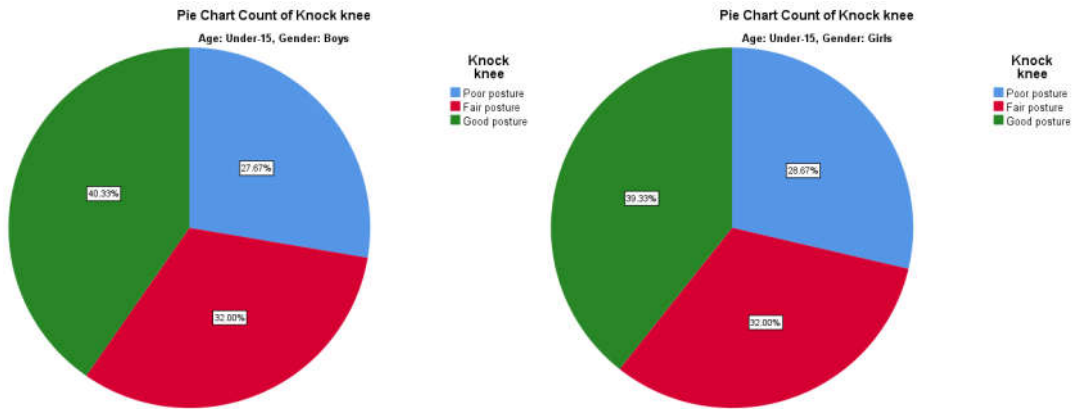
**Figure 28**

*Pie chart showing the percentage of Knock knee among Under 14 year boys and Under 14 years girls irrespective of the type of school*



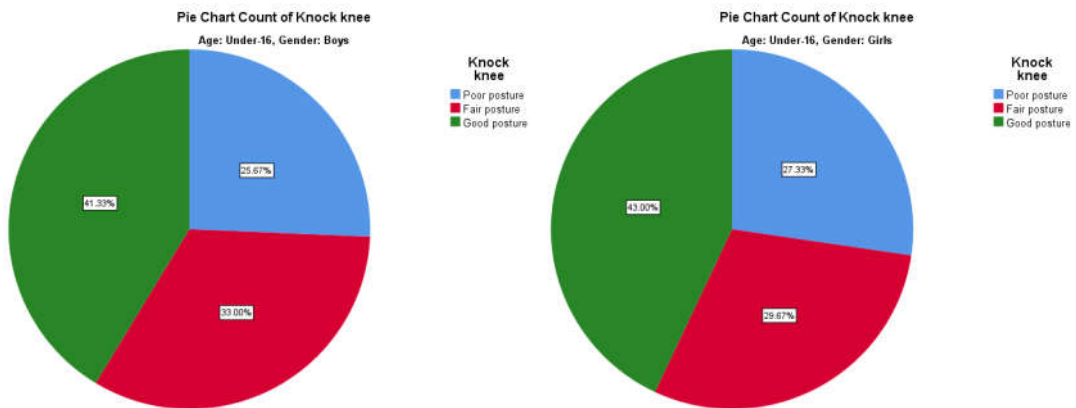
**Figure 29**

*Pie chart showing the percentage of Knock knee among Under 15 year boys and Under 15 years girls irrespective of the type of school*



**Figure 30**

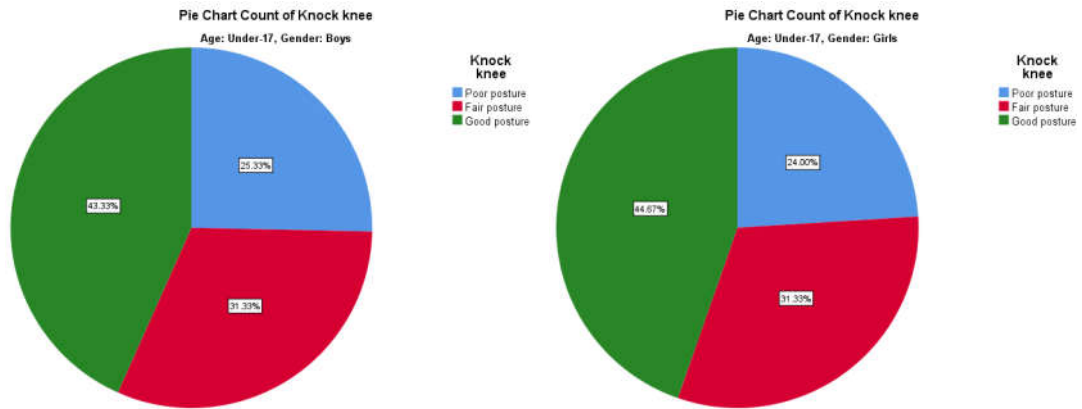
*Pie chart showing the percentage of Knock knee among Under 16 year boys and Under 16 years girls irrespective of the type of school*





**Figure 31**

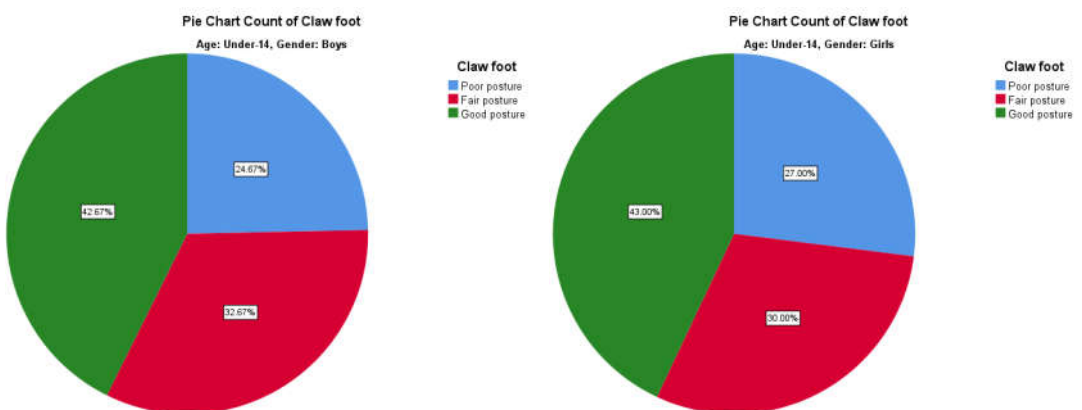
*Pie chart showing the percentage of Knock knee among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Claw foot among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 32, 33, 34 and 45 respectively.

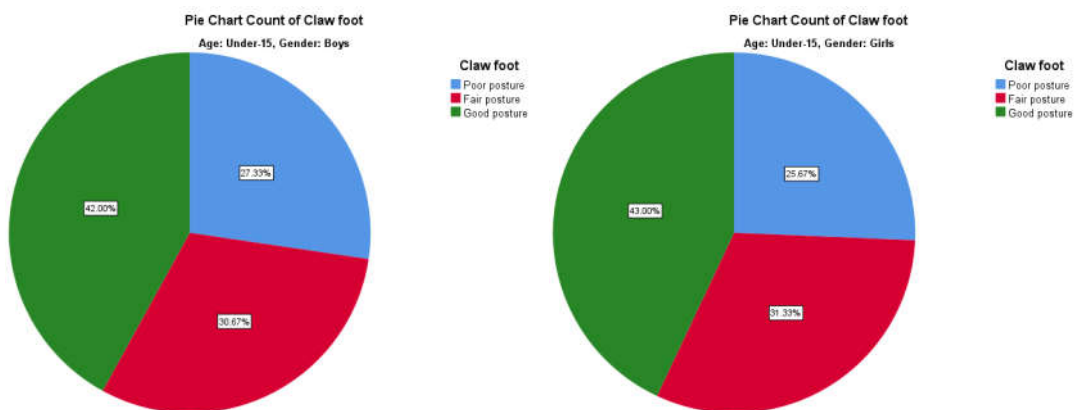
**Figure 32**

*Pie chart showing the percentage of Claw foot among Under 14 year boys and Under 14 years girls irrespective of the type of school*



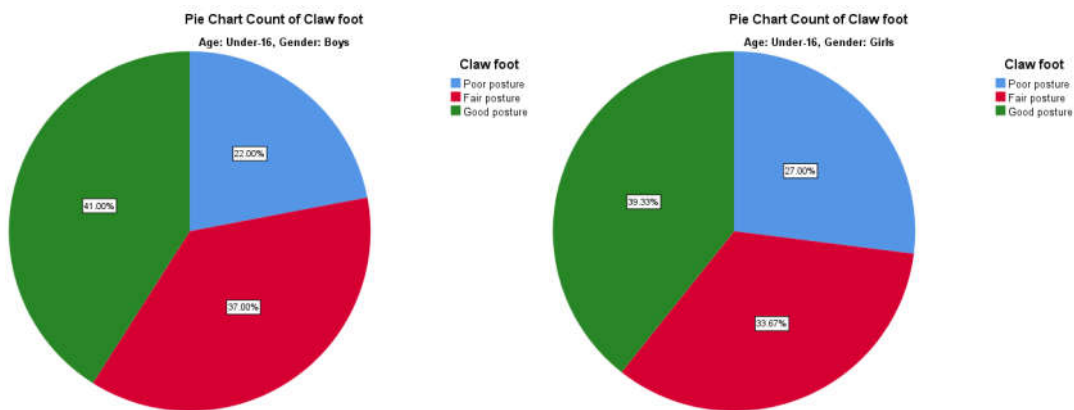
**Figure 33**

*Pie chart showing the percentage of Claw foot among Under 15 year boys and Under 15 years girls irrespective of the type of school*



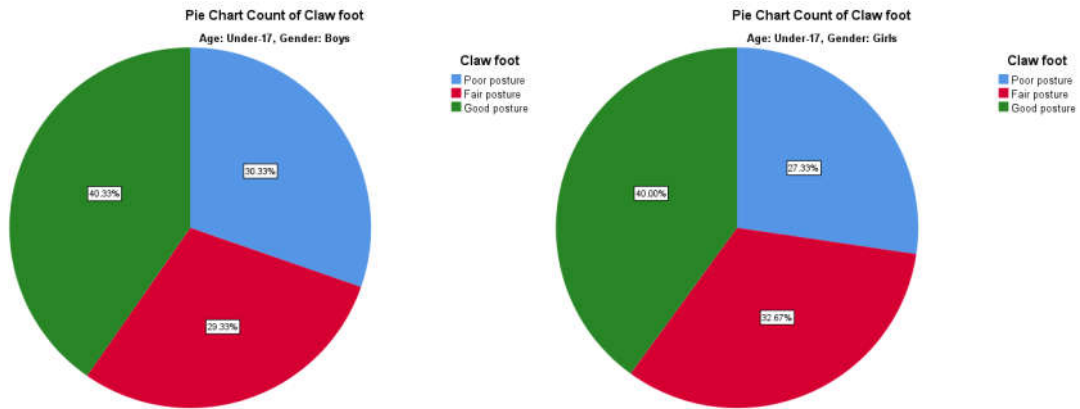
**Figure 34**

*Pie chart showing the percentage of Claw foot among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 35**

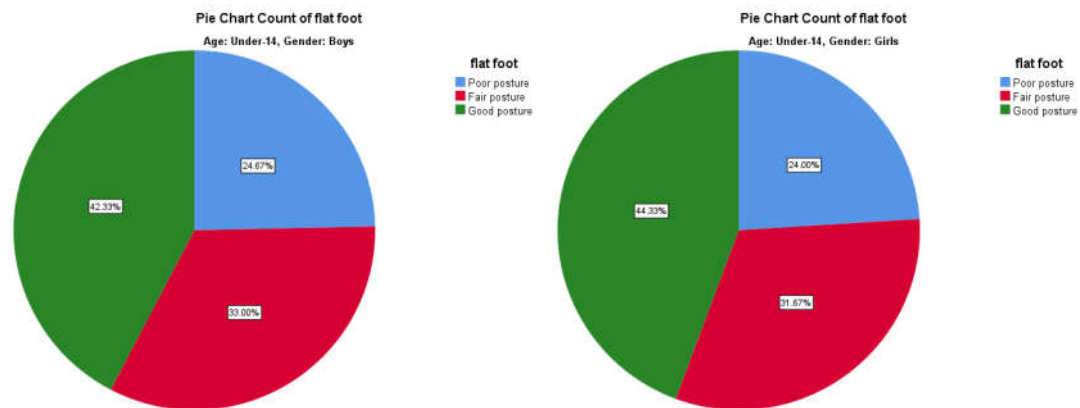
*Pie chart showing the percentage of Claw foot among Under 17 year boys and Under 17 years girls irrespective of the type of school*



The graphical representation of the percentage of Flat foot among the Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls irrespective of the type of school is presented in figure 36, 37, 38 and 39 respectively.

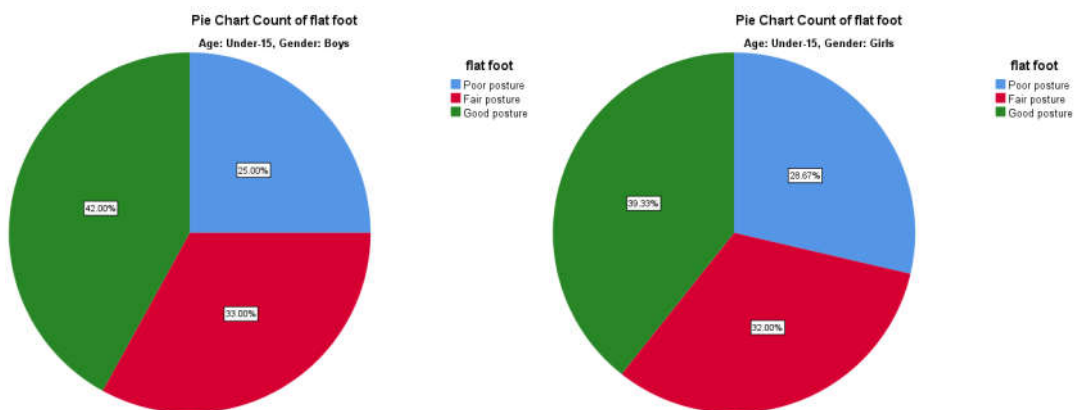
**Figure 36**

*Pie chart showing the percentage of Flat foot among Under 14 year boys and Under 14 years girls irrespective of the type of school*



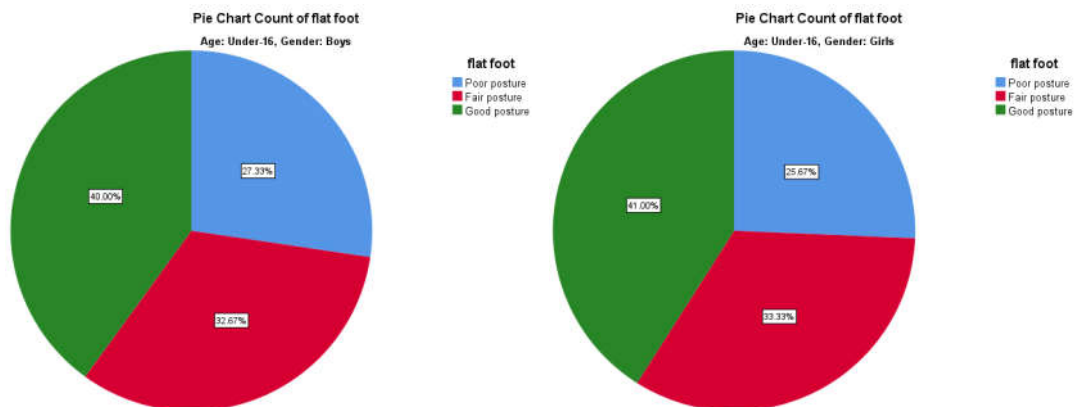
**Figure 37**

*Pie chart showing the percentage of Flat foot among Under 15 year boys and Under 15 years girls irrespective of the type of school*



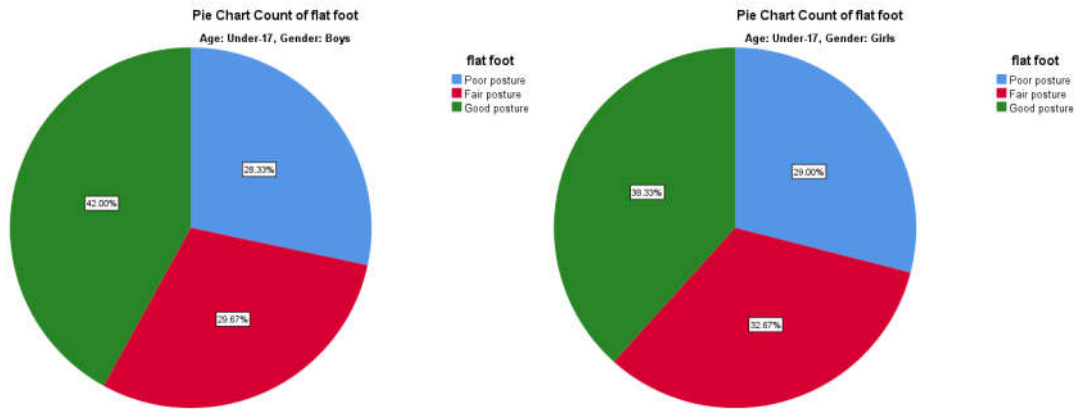
**Figure 38**

*Pie chart showing the percentage of Flat foot among Under 16 year boys and Under 16 years girls irrespective of the type of school*



**Figure 39**

*Pie chart showing the percentage of Flat foot among Under 17 year boys and Under 17 years girls irrespective of the type of school*



Later, data collected from the various groups were statistically examined for significant difference in means by applying two way analysis of variance (two way ANOVA) across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) and among the three types of school such as Government, Aided and Private (irrespective of age and gender) to compare the selected thirteen Physical fitness variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 1, Explosive power 2 and Reaction time and is presented in table 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52 & 55 respectively.

### 4.3 Two-Way Analysis of Variance

**Table 19**

*Two-way Analysis of variance done on Speed among different age groups and type of school irrespective of gender*

Source	Sum of Squares	Df	Mean Sum of Squares	F	Sig.
Corrected Model	180.630 <sup>a</sup>	11	16.421	29.430	.000
Intercept	345541.922	1	345541.922	619292.187	.000
Age	151.799	3	50.600	90.687*	0.000
School	4.213	2	2.106	3.775*	0.023
Age * School	24.618	6	4.103	7.354*	0.000
Error	1332.415	2388	.558		
Total	347054.968	2400			
Corrected Total	1513.045	2399			

<sup>a</sup> R Squared = .119 (Adjusted R Squared = .115)  
Significant at 0.05 level

Table 19 related to the Two way ANOVA done on Speed across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years irrespective of gender and type of school shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 90.69$ ,  $p = 0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 3.775$ ,  $p = 0.023$  and that for interaction effect as  $F_{(6,2388)} = 7.35$ ,  $p = 0.001$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 90.69$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 20.

**Table 20**

*Tukey HSD Post-hoc test done on Speed among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (12.240)	Under 15 years (12.047)	0.1929*	.04313	0.000	.0820	.3037
	Under 16 years (12.129)	0.1110*	.04313	0.050	.0001	.2219
	Under 17 years (11.58)	0.6602*	.04313	0.000	.5493	.7710
Under 15 years (12.047)	Under 16 years (12.129)	0.0819	.04313	0.229	-.1927	.0290
	Under 17 years (11.58)	0.4673*	.04313	0.000	.3564	.5782
Under 16 years (12.129)	Under 17 years (11.58)	0.5492*	.04313	0.000	.4383	.6600

Based on observed means.\*

The error term is Mean Square(Error) = .558.

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

Table 20 related to post-hoc test done on Speed among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 0.1929 & p= 0.000), Under 16 years (MD = 0.1110 & p= 0.50), and Under 17 years (MD = 0.6602 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 17 years (MD = 0.4673 & p= 0.000) and between Under 16 years and Under 17 years (MD = 0.5492 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. While on the other hand, no significant difference in means was found between Under 15 years and Under 16 years (MD = 0.0819 & p= 0.229), as the p-value obtained was more than 0.05, the level of significance set for this study. The graphical representation of the

means on Speed among different age groups irrespective of gender and type of school is presented in Figure 45.

Since the F-ratio mentioned in table 19 related to the type of school was found to be significant  $F_{(2,2388)} = 3.775$ ,  $p = 0.023$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 21.

**Table 21**

*Tukey HSD Post-hoc test done on Speed among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (12.055)	Govt (11.955)	0.1006*	.03735	0.019	.0130	.1882
	Private (11.987)	0.0678	.03735	0.165	-.0198	.1554
Govt (11.955)	Private (11.987)	0.0328	.03735	0.653	-.1204	.0547

Based on observed means.

The error term is Mean Square(Error) = .558.

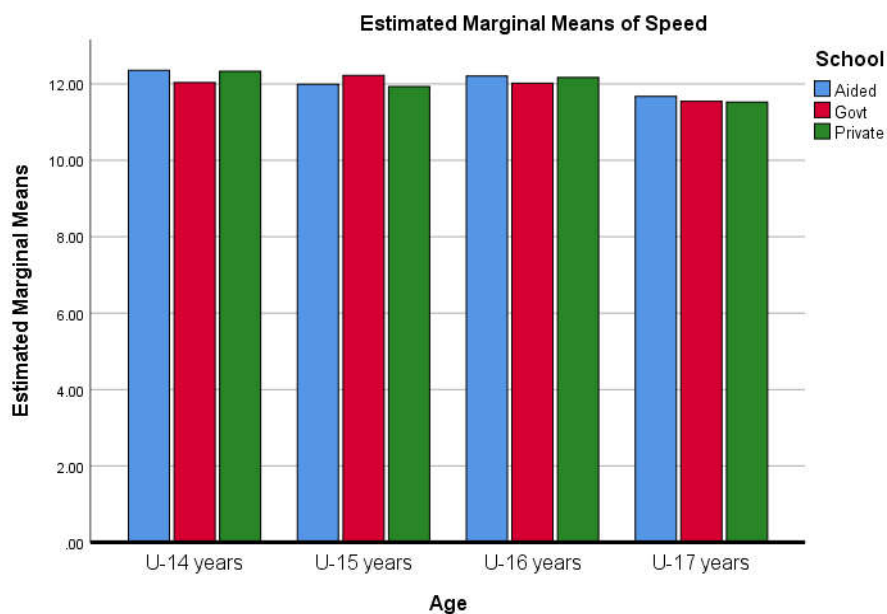
\*. The mean difference is significant at the 0.05 level.

Table 21 related to post-hoc test done on Speed among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 0.1006 &  $p = 0.019$ ), as the p-value obtained was much less than 0.05, the level of significance set for this study. While on the other hand no significant difference in means was found among Aided and Private schools MD = 0.0678 &  $p = 0.165$ ) and Government and Private schools (MD = 0.0328 &  $p = 0.653$ ) were more than 0.05, the level of significance set for this study. The graphical representation of the means on Speed among different types of schools irrespective of age and gender is presented in Figure 40.



**Figure 40**

*Graphical representation of means on Speed among different age groups irrespective of gender and type of school*



**Table 22**

*Two-way Analysis of variance done on Agility among different types of school irrespective of age and gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1578.045 <sup>a</sup>	11	143.459	120.645	0.000
Intercept	911391.400	1	911391.400	766459.063	0.000
Age	1113.655	3	371.218	312.186*	0.000
School	2.656	2	1.328	1.117	0.328
Age * School	461.734	6	76.956	64.718*	0.000a
Error	2839.555	2388	1.189		
Total	915809.000	2400			
Corrected Total	4417.600	2399			

a. R Squared = .357 (Adjusted R Squared = .354)

Table 22 related to the Two way ANOVA done on Agility across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 312.186$ ,  $p = 0.000$  and that for interaction effect as  $= F_{(6,2388)} = 64.718$ ,  $p = 0.000$ . On the other hand, no significant mean difference was found among schools as the obtained  $F_{(2,2388)}$  ratio was 1.117 with p-value as 0.328.

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 312.186$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 23.

**Table 23**

*Tukey HSD Post-hoc test done on Agility among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 Years (20.527)	Under15 years (19.620)	0.907*	0.63	0.000	1.30	0.74
	Under 16 years (19.088)	1.44*	0.63	0.000	1.28	1.60
	Under 17 years (18.713)	1.81*	0.63	0.000	1.65	1.98
Under15 years (19.620)	U-16 years (19.088)	0.53*	.063	0.000	.37	.69
	U-17 years (18.713)	0.91*	.063	0.000	.74	1.07
U-16 years (19.088)	U-17 years (18.713)	0.38*	.063	0.000	.21	.54

Based on observed means.

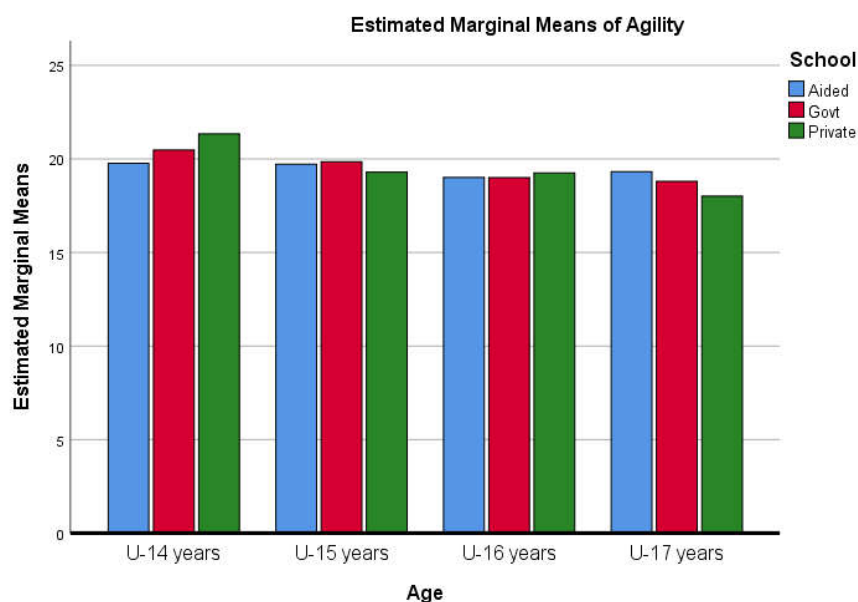
The error term is Mean Square(Error) = 1.189.

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

Table 23 related to post-hoc test done on Agility among different age groups irrespective of gender and type of school do shows significant mean differences among Under 14 years with Under 15 years (MD = 0.907 & p= 0.000), with Under 16 years (MD = 1.44 & p= 0.000) and with Under 17 Years (MD = 1.81 & p= 0.000). Besides, significant differences were also found between Under 15 years with other groups such as Under 16 years (MD = 0.53& p= 0.000), and Under 17 years (MD = 0.91& p= 0.000). Apart from that, significant mean differences were also found between Under 16 years and Under 17 years (MD = 0.38& p= 0.000), as the p-values obtained were all less than 0.05, the level of significance set for this study. The graphical representation of the means on Agility among different age groups irrespective of gender and type of school is presented in Figure 41.

**Figure 41**

*Graphical representation of means on Agility among different types of school irrespective of age and gender*



**Table 24**

*Two-way Analysis of variance done on Static balance among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	176.290 <sup>a</sup>	11	16.026	241.814	.000
Intercept	40943.994	1	40943.994	617784.158	.000
Age	136.763	3	45.588	687.851*	.000
School	29.496	2	14.748	222.528*	.000
Age * School	10.030	6	1.672	25.223*	.000
Error	158.266	2388	.066		
Total	41278.550	2400			
Corrected Total	334.556	2399			

a. R Squared = .527 (Adjusted R Squared = .525)

Table 19 related to the Two way ANOVA done on Static balance across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 687.851$ ,  $p = 0.000$  and F-ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 222.528$ ,  $p = 0.000$  and that for interaction effect as  $F_{(6,2388)} = 25.223$ ,  $p = 0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 687.851$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 25.

**Table 25**

*Tukey HSD post-hoc test done on Static balance among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	Under 15 years (4.008)	.179*	.0149	0.000	-.217	-.140
Under 14 years (3.829)	Under 16 years (4.216)	.387*	.0149	0.000	-.425	-.348
	Under 17 years (4.469)	.640*	.0149	0.000	-.678	-.602
Under 15 years (4.008)	Under 16 years (4.216)	.208*	.0149	0.000	-.246	-.170
	Under 17 years (4.469)	.462*	.0149	0.000	-.500	-.423
Under 16 years (4.216)	Under 17 years (4.469)	.254*	.0149	0.000	-.292	-.215

Based on observed means.  
The error term is Mean Square(Error) = .066.  
\*. The mean difference is significant at the 0.05 level.

Table 25 related to post-hoc test done on Static balance among different age groups irrespective of gender and type of school do shows significant mean differences among Under 14 years with Under 15 years (MD = 0.179 & p= 0.000), with Under 16 years (MD = 0.387 & p= 0.000) and with Under 17 Years (MD = 0.640 & p= 0.000). Besides, significant differences were also found between Under 15 years with Under 16 years (MD = 0.208 & p= 0.000), and Under 17 years (MD = 0.462 & p= 0.000). Apart from that, significant mean differences were also found between

Under 16 years and Under 17 years (MD = 0.254 & p= 0.000), as the p-value obtained were all less than 0.05, the level of significance set for this study. The graphical representation of the means on Static balance among different age groups irrespective of gender and type of school is presented in Figure 42.

**Table 26**

*Tukey HSD post-hoc test done on Static balance among different types of schools irrespective of age and gender*

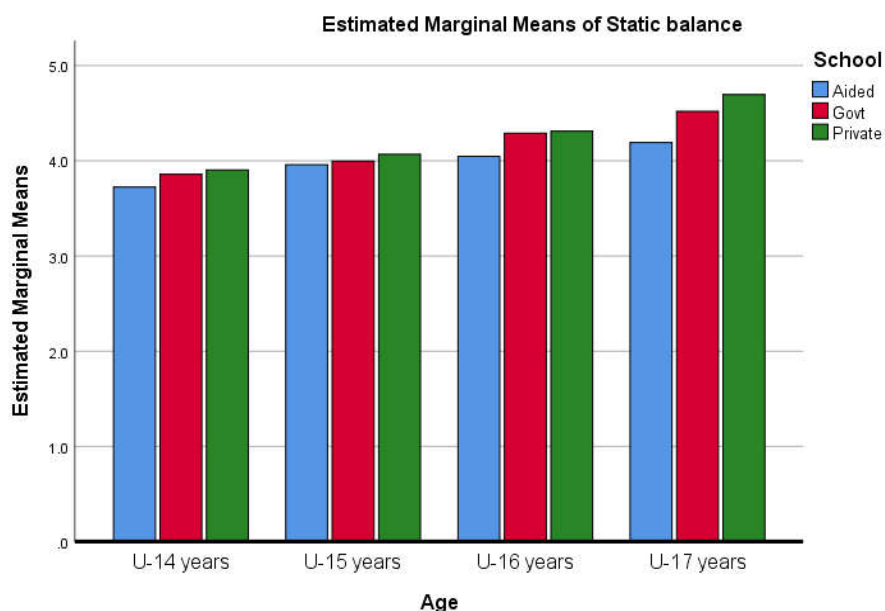
(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (3.980)	Govt (4.166)	0.185*	.0129	0.000	-.216	-.155
	Private (4.245)	0.265*	.0129	0.000	-.295	-.234
Govt (4.166)	Private (4.245)	0.079*	.0129	0.000	-.109	-.049

Based on observed means.  
The error term is Mean Square(Error) = .066.  
\*. The mean difference is significant at the 0.05 level.

Table 26 related to Post-hoc test done on Static balance among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 0.185 & p = 0.000), between Aided and Private schools (MD = 0.265 & p = 0.000) and between Government and Private schools MD = 0.079 & p = 0.000) as the p-value obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Static balance among different types of schools irrespective of age and gender is presented in Figure 42.

**Figure 42**

*Graphical representation of means on Static balance among different types of school irrespective of age and gender*



**Table 27**

*Two-way Analysis of variance done on Dynamic balance among different age groups irrespective of gender and type of school*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	34122.581 <sup>a</sup>	11	3102.053	116.740	.000
Intercept	4051391.854	1	4051391.854	152466.946	.000
Age	9588.555	3	3196.185	120.283*	0.000
School	22537.563	2	11268.781	424.081*	0.000
Age * School	1996.464	6	332.744	12.522*	0.000
Error	63454.565	2388	26.572		
Total	4148969.000	2400			
Corrected Total	97577.146	2399			

a. R Squared = .350 (Adjusted R Squared = .347)

Table 27 related to the Two way ANOVA done on Dynamic balance across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means for age as the obtained F ratio was  $F_{(3,2388)} = 120.283$ ,  $p = 0.000$ , that for type of school irrespective of age and gender  $F_{(2,2388)} = 424.081$ ,  $p = 0.000$  and that for interaction effect as  $F_{(6,2388)} = 12.522$ ,  $p = 0.000$

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 120.283$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 28.

**Table 28**

*Tukey HSD Post-hoc test done on Dynamic balance among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (39.195)	Under 15 years (39.657)	0.46	.298	0.407	-1.23	.30
	Under 16 years (41.190)	2.00*	.298	0.000	-2.76	-1.23
	Under 17 years (44.303)	5.11*	.298	0.000	-5.87	-4.34
Under 15 years (39.657)	Under 16 years (41.190)	1.53*	.298	0.000	-2.30	-.77
	Under 17 years (44.303)	4.65*	.298	0.000	-5.41	-3.88
Under 16 years (41.190)	Under 17 years (44.303)	3.11*	.298	0.000	-3.88	-2.35

Based on observed means.

The error term is Mean Square(Error) = 26.572.

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



Table 28 related to post-hoc test done on Dynamic balance among different age groups irrespective of gender and type of school do shows significant mean differences between Under 14 years with Under 16 years (MD = 2.00 & p= 0.000) and with Under 17 Years (MD = 5.11 & p= 0.000). Besides, significant differences were also found between Under 15 years with other groups such as Under 16 years (MD = 1.53 & p= 0.000), and Under 17 years (MD = 4.65 & p= 0.000). Apart from that, significant mean differences were also found between Under 16 years and Under 17 years (MD = 3.11& p= 0.000). as the p-value obtained were all less than 0.05, the level of significance set for this study. On the other hand, no significant differences in mean was found among Under 14 years and Under 15 years, as the MD was 0.46 and the p-value was 0.407, which was much greater than 0.05, the level of significance set for this study. The graphical representation of the means on Dynamic balance among different age groups irrespective of gender and type of school is presented in Figure 43.

Since the F-ratio related to the type school was found to be significant ( $F_{(2,2388)} = 424.081, p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different school groups irrespective of age and gender and is presented in table 29.

**Table 29**

*Tukey HSD Post-hoc test done on Dynamic balance among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (37.330)	Govt (41.092)	3.76*	.258	0.000	-4.37	-3.16
	Private (44.836)	7.51*	.258	0.000	-8.11	-6.90
Govt (41.092)	Private (44.836)	3.74*	.258	0.000	-4.35	-3.14
Private (44.836)	Govt (41.092)	3.74*	.258	0.000	3.14	4.35

Based on observed means.

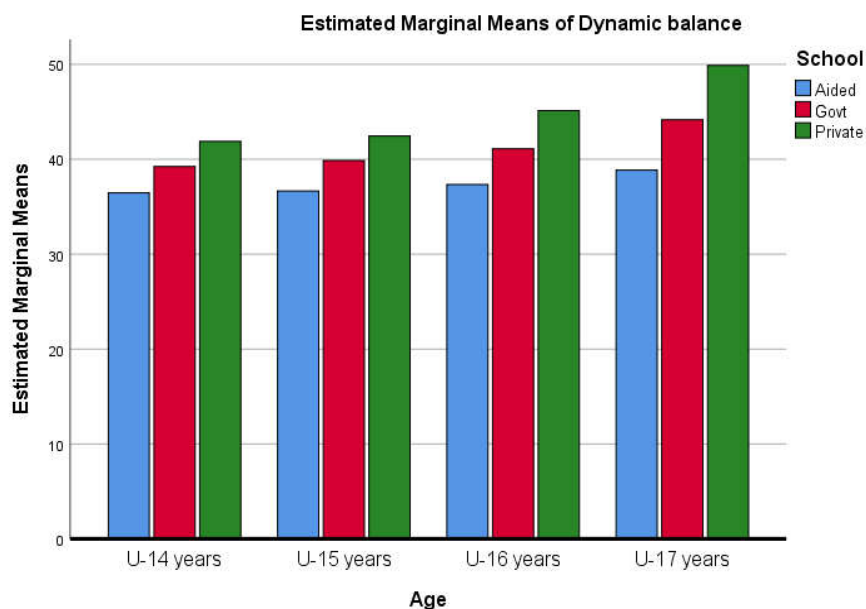
The error term is Mean Square(Error) = 26.572.

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

Table 29 related to Post-hoc test done on Dynamic balance among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 3.76 & p = 0.000), between Aided and Private schools (MD = 7.51 & p= 0.000) and between Government and Private schools MD = 3.74 & p = 0.000 )as the p-value obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Dynamic balance among different types of schools irrespective of age and gender is presented in Figure 43.

**Figure 43**

*Graphical representation of means on Dynamic balance among different types of school irrespective of age and gender*

**Table 30**

*Two-way Analysis of variance done on Movement time among different age groups irrespective of gender and type of school*

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	66356.025 <sup>a</sup>	11	6032.366	544.948	.000*
Intercept	2656143.735	1	2656143.735	239949.068	.000*
Age	39531.338	3	13177.113	1190.386*	0.000
School	26582.822	2	13291.411	1200.711*	0.000
Age * School	241.864	6	40.311	3.642*	0.001
Error	26434.240	2388	11.070		
Total	2748934.000	2400			
Corrected Total	92790.265	2399			

a. R Squared = .715 (Adjusted R Squared = .714)

Table 30 related to the Two way ANOVA done on Movement time across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 1190.386$ ,  $p = 0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 1200.711$ ,  $p = 0.000$  and that for interaction effect as  $= F_{(6,2388)} = 3.642$   $p = 0.001$

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 1190.386$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 31.

**Table 31**

*Tukey HSD Post-hoc test done on Movement time among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (38.182)	Under 15 years (35.835)	2.35*	.192	0.000	1.85	2.84
	Under 16 years (31.418)	6.76*	.192	0.000	6.27	7.26
	Under 17 years (27.635)	10.55*	.192	0.000	10.05	11.04
Under 15 years (35.835)	Under 16 years (31.418)	4.42*	.192	0.000	3.92	4.91
	Under 17 years (27.635)	8.20*	.192	0.000	7.71	8.69
Under 16 years (31.418)	Under 17 years (27.635)	3.78*	.192	0.000	3.29	4.28

Based on observed means.

The error term is Mean Square(Error) = 11.070.

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

Table 31 related to post-hoc test done on Movement time among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 2.35 & p= 0.000), Under 16 years (MD = 6.76 & p= 0.000), and Under 17 years (MD = 10.55 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD= 4.42 & p=0.000) and also between Under 17 years (MD = 8.20 & p= 0.000) and between Under 16 years and Under 17 years (MD = 0.3.78 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. The graphical representation of the means on Movement time among different age groups irrespective of gender and type of school is presented in Figure 44.

Since the F-ratio mentioned in table 30 related to the type of school was found to be significant  $F_{(2,2388)} = 1200.711$ ,  $p=0.000$ , inorder to verify whether the differences really exist or not,the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 32.

**Table 32**

*Tukey HSD Post-hoc test done on Movement time among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (37.309)	Govt (33.336)	3.97*	.166	0.000	3.58	4.36
	Private (29.158)	8.15*	.166	0.000	7.76	8.54
Govt (33.336)	Private (29.158)	4.18*	.166	0.000	3.79	4.57

Based on observed means.

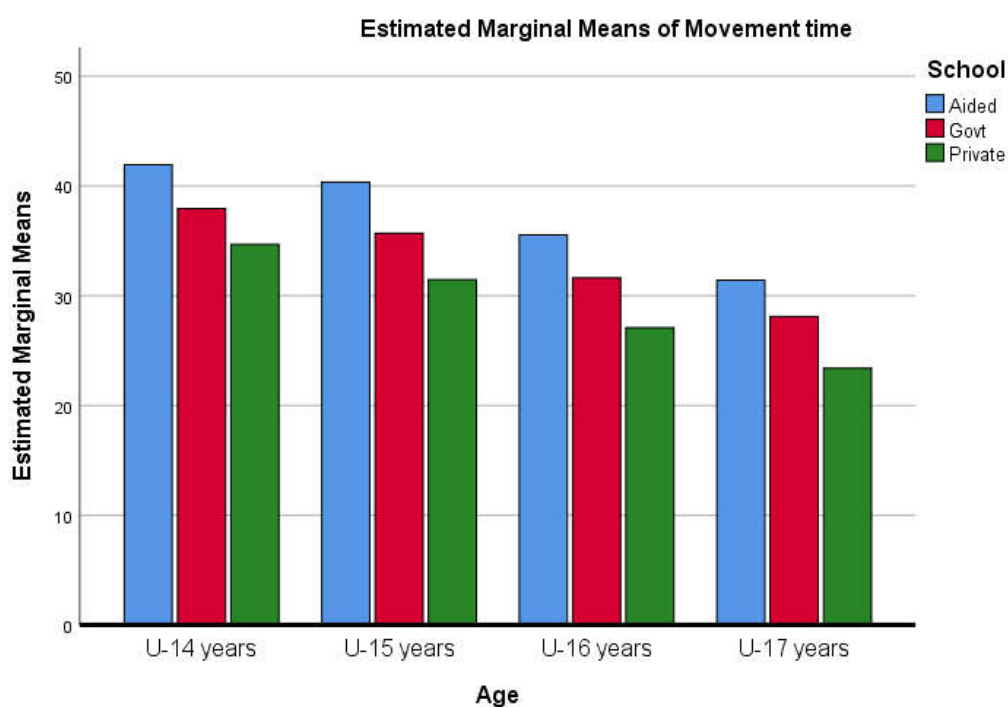
The error term is Mean Square(Error) = 11.070.

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

Table 32 related to Post-hoc test done on Movement time among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 3.97 & p = 0.000), between Aided and Private schools (MD = 8.15 & p = 0.000) and between Government and Private schools MD = 4.18 & p = 0.000) as the p-value obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Movement time among different types of schools irrespective of age and gender is presented in Figure 44.

**Figure 44**

*Graphical representation of means on Movement time among different types of school irrespective of age and gender*



**Table 33**

*Two-way Analysis of variance done on Flexibility among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	48331.921 <sup>a</sup>	11	4393.811	438.632	0.000
Intercept	2161620.304	1	2161620.304	215793.564	0.000
Age	8902.395	3	2967.465	296.241*	0.000
School	37983.518	2	18991.759	1895.939*	0.000
Age * School	1446.009	6	241.002	24.059*	0.000
Error	23920.775	2388	10.017		
Total	2233873.000	2400			
Corrected Total	72252.696	2399			

a. R Squared = .669 (Adjusted R Squared = .667)

Table 33 related to the Two way ANOVA done on Flexibility across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 296.241$ ,  $p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 1895.939$ ,  $p=0.000$  and that for interaction effect as  $F_{(6,2388)} = 24.059$ ,  $p=0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 296.241$ ,  $p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 34.

**Table 34**

*Tukey HSD Post-hoc test done on Flexibility among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	Under 15 years (28.5)	0.62*	.183	0.004	-1.08	-.15
Under 14 years (27.885)	Under 16 years (30.988)	3.10*	.183	0.000	-3.57	-2.63
	Under 17 years (32.672)	4.79*	.183	0.000	-5.26	-4.32
	Under 16 years (30.988)	2.49*	.183	0.000	-2.96	-2.02
Under 15 years (28.5)	Under 17 years (32.672)	4.17*	.183	0.000	-4.64	-3.70
	Under 16 years (30.988)	1.68*	.183	0.000	-2.15	-1.21

Based on observed means.

The error term is Mean Square(Error) = 10.017.

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

Table 34 related to post-hoc test done on Flexibility among different age groups irrespective of gender and type of school do shows significant mean differences among Under 14 years with Under 15 years (MD = 0.62 & p= 0.004), with Under 16 years (MD = 3.10 & p= 0.000) and with Under 17 Years (MD = 4.79 & p= 0.000). Besides, significant differences were also found between Under 15 years with other groups such as Under 16 years (MD = 2.49 & p= 0.000), and Under 17 years (MD = 4.17 & p= 0.000). Apart from that, significant mean differences were also found between Under 16 years and Under 17 years (MD = 1.68 & p= 0.000). As the



p-value obtained were all less than 0.05, the level of significance set for this study. The graphical representation of the means on Agility among different age groups irrespective of gender and type of school and is presented in Figure 45.

Since the F-ratio mentioned in table 33 related to the type of school was found to be significant  $F_{(2,2388)} = 1895.939$ ,  $p=0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 35.

**Table 35**

*Tukey HSD Post-hoc test done on Flexibility among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (25.240)	Govt (29.815)	4.57*	.158	0.000	-4.95	-4.20
	Private (34.979)	9.74*	.158	0.000	-10.11	-9.37
Govt (29.815)	Private (34.979)	5.16*	.158	0.000	-5.53	-4.79

Based on observed means.

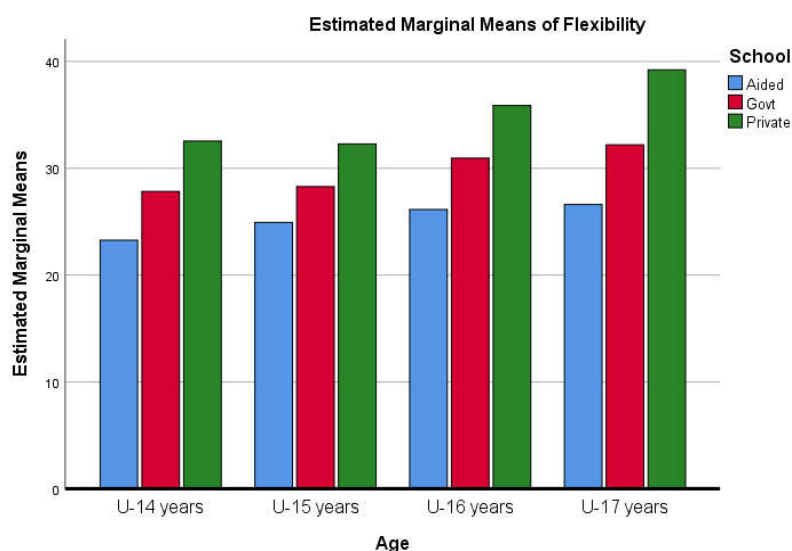
The error term is Mean Square(Error) = 10.017.

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

Table 35 related to post-hoc test done on Flexibility among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 4.57 &  $p = 0.000$ ), between Aided and Private schools (MD = 9.74 &  $p = 0.000$ ) and between Government and Private schools MD = 5.16 &  $p = 0.000$ ) as the p-values obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Flexibility among different types of schools irrespective of age and gender and is presented in Figure 45.

**Figure 45**

*Graphical representation of means on Flexibility among different types of school irrespective of age and gender*

**Table 36**

*Two-way Analysis of variance done on Ankle flexibility among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	709.905 <sup>a</sup>	11	64.537	43.323	0.000
Intercept	604805.750	1	604805.750	405998.331	0.000
Age	164.198	3	54.733	36.741*	0.000
School	34.773	2	17.387	11.671*	0.000
Age * School	510.933	6	85.156	57.164*	0.000
Error	3557.345	2388	1.490		
Total	609073.000	2400			
Corrected Total	4267.250	2399			

a. R Squared = .166 (Adjusted R Squared = .163)

Table 36 related to the Two way ANOVA done on Ankle flexibility across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 36.741$ ,  $p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 11.671$ ,  $p=0.000$  and that for interaction effect as  $F_{(6,2388)} = 57.164$ ,  $p=0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 36.741$ ,  $p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 37.

**Table 37**

*Tukey HSD Post-hoc test done on Ankle flexibility among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (15.151)	Under 15 years (15.27)	0.11	.070	0.374	-.29	.07
	Under 16 years (15.63)	0.47*	.070	0.000	-.65	-.29
	Under 17 years (15.80)	0.65*	.070	0.000	-.83	-.46
Under 15 years (15.27)	Under 16 years (15.63)	0.36*	.070	0.000	-.54	-.18
	Under 17 years (15.80)	0.53*	.070	0.000	-.71	-.35
Under 16 years (15.63)	Under 17 years (15.80)	0.17	.070	0.071	-.35	.01

Based on observed means.

The error term is Mean Square(Error) = 1.490.

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

Table 37 related to post-hoc test done on Ankle flexibility among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 16 years (MD = 0.47 & p= 0.000), and Under 17 years (MD = 0.65 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD = 0.36 & p= 0.000) and also between Under 15 years and Under 17 years (MD = 0.53 & p= 0.000) as all the p-values obtained were less than 0.05, the level of significance set for this study. While on the other hand, no significant difference in means were found among Under 14 years and Under 15 years (MD = 0.11& p= 0.374) and also between Under 16 years and Under 17 years (MD = 0.17& p= 0.071),as the p-values obtained were more than 0.05, the level of significance set for this study. The graphical representation of the means on Ankle flexibility among different age groups irrespective of gender and type of school is presented in Figure 46.

Since the F-ratio mentioned in table 36 related to the type of school was found to be significant  $F_{(2,2388)} = 11.671$ , p=0.000, inorder to verify whether the differences really exist or not,the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 38.

**Table 38**

*Tukey HSD Post-hoc test done on Ankle flexibility among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (15.761)	Govt (15.821)	0.06	.061	0.588	-.20	.08
	Private (16.041)	0.28*	.061	0.000	-.42	-.14
Govt (15.821)	Private (16.041)	0.22*	.061	0.001	-.36	-.08

Based on observed means.

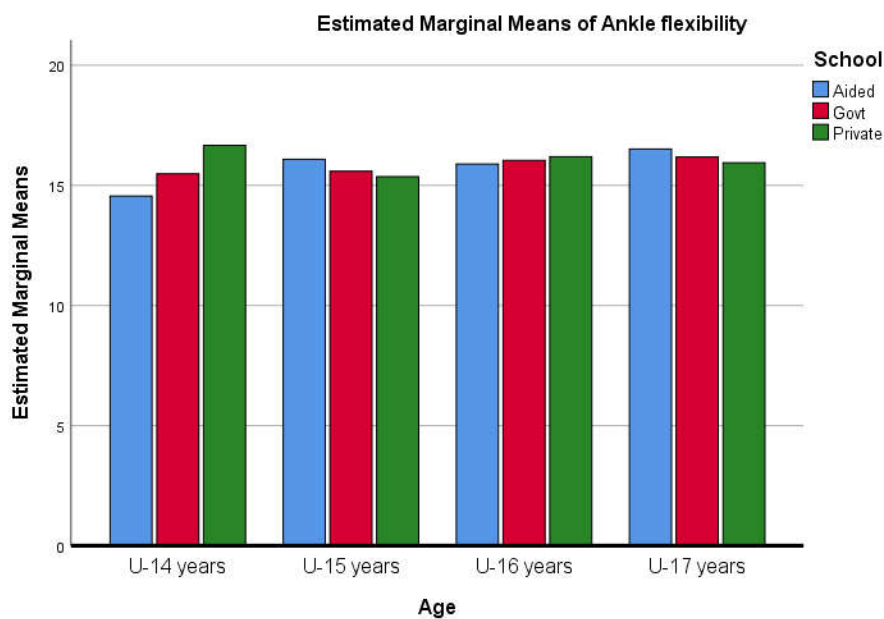
The error term is Mean Square (Error) = 1.490.

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

Table 38 related to post-hoc test done on Ankle flexibility among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Private schools (MD = 0.28 & p = 0.000), between Government and Private schools (MD = 0.22 & p = 0.001), as the p-values obtained were much less than 0.05, the level of significance set for this study. While on the other hand, no significant difference in means was found among Aided and Government schools (MD = 0.06 & p = 0.588) which was more than 0.05, the level of significance set for this study. The graphical representation of the means on Ankle flexibility among different types of schools irrespective of age and gender is presented in Figure 46.

**Figure 46**

*Graphical representation of means on Ankle flexibility among different types of school irrespective of age and gender*



**Table 39**

*Two-way Analysis of variance done on Abdominal strength among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	92791.503 <sup>a</sup>	11	8435.591	252.609	.000
Intercept	2294264.007	1	2294264.007	68703.210	.000
Age	3257.723	3	1085.908	32.518*	0.000
School	88658.306	2	44329.153	1327.465*	0.000
Age * School	875.474	6	145.912	4.369*	0.000
Error	79744.490	2388	33.394		
Total	2466800.000	2400			
Corrected Total	172535.993	2399			

a. R Squared = .538 (Adjusted R Squared = .536)

Table 39 related to the Two way ANOVA done on Abdominal strength across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 32.518$ ,  $p = 0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 1327.465$  &  $p = 0.000$  and that for interaction effect as  $F_{(6,2388)} = 4.369$  &  $p = 0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 32.518$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 40.

**Table 40**

*Tukey HSD Post-hoc test done on Abdominal strength among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	Under 15 years(30.495)	1.03*	.334	0.011	-1.89	-.18
Under 14 years(29.462)	Under 16 years(31.033)	1.57*	.334	0.000	-2.43	-.71
	Under 17 years(32.683)	3.22*	.334	0.000	-4.08	-2.36
U-15 years (30.495)	Under 16 years (31.033)	0.54	.334	0.371	-1.40	.32
	Under 17 years (32.683)	2.19*	.334	0.000	-3.05	-1.33
U-16 years (31.033)	Under 17 years(32.683)	1.65*	.334	0.000	-2.51	-.79

Based on observed means.

The error term is Mean Square(Error) = 33.394.

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

Table 40 related to post-hoc test done on Abdominal strength among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 1.03 & p= 0.011), Under 16 years (MD = 1.57 & p= 0.000), and Under 17 years (MD =3.22 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 17 years (MD = 2.19 & p= 0.000) and between Under 16 years and Under 17 years (MD = 1.65 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. While on the other hand, no significant difference in means was found among Under 15 years and

Under 16 years (MD = 0.54 & p= 0.371), as the p-value obtained was more than 0.05, the level of significance set for this study. The graphical representation of the means on Abdominal strength among different age groups irrespective of gender and type of school is presented in Figure 47.

Since the F-ratio mentioned in table 39 related to the type of school was found to be significant  $F_{(2,2388)} = 1327.465$ ,  $p = 0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 41.

**Table 41**

*Tukey HSD Post-hoc test done on Abdominal strength among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (21.32)	Govt (28.95)	7.63*	.289	0.000	-8.31	-6.95
	Private (36.21)	14.89*	.289	0.000	-15.56	-14.21
Govt (28.95)	Private (36.21)	7.26*	.289	0.000	-7.94	-6.58

Based on observed means.

The error term is Mean Square(Error) = 33.394.

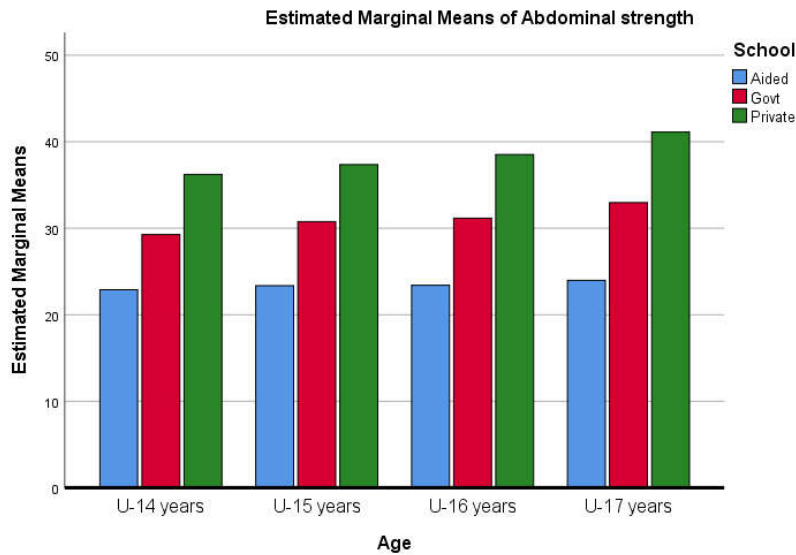
\*. The mean difference is significant at the 0.05 level.

Table 41 related to post-hoc test done on Abdominal strength among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 7.63 & p = 0.000), Aided and Private schools (MD = 14.89 & p = 0.165) and between Government and Private schools (MD = 7.26 & p = 0.000) as the p-value obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Abdominal strength among different types of schools irrespective of age and gender is presented in Figure 47.



**Figure 47**

*Graphical representation of means on Abdominal strength among different types of school irrespective of age and gender*



**Table 42**

*Two-way Analysis of variance done on Coordination among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	465.044 <sup>a</sup>	11	42.277	86.753	.000
Intercept	965022.552	1	965022.552	1980257.910	.000
Age	56.309	3	18.770	38.516*	0.000
School	76.684	2	38.342	78.679*	0.000
Age * School	332.051	6	55.342	113.563*	0.000
Error	1163.724	2388	.487		
Total	966651.320	2400			
Corrected Total	1628.768	2399			

a. R Squared = .286 (Adjusted R Squared = .282)

Table 42 related to the Two way ANOVA done on Coordination across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 38.516$ ,  $p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 78.679$ ,  $p=0.000$  and that for interaction effect as  $F_{(6,2388)} = 113.563$ ,  $p=0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 38.516$ ,  $p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 43.

**Table 43**

*Tukey HSD Post-hoc test done on Coordination among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (19.971)	Under 15 years (20.311)	0.339*	.0403	0.000	-.443	-.236
	Under 16 years (20.013)	0.042	.0403	0.730	-.145	.062
	Under 17 years (19.914)	0.057	.0403	0.488	-.046	.161
U-15 years (20.311)	Under 16 years (20.013)	0.298*	.0403	0.000	.194	.401
	Under 17 years (19.914)	0.396*	.0403	0.000	.293	.500
U-16 years (20.013)	Under 17 years (19.914)	0.099	.0403	0.068	-.005	.202

Based on observed means.

The error term is Mean Square(Error) = 0.487.

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

Table 43 related to post-hoc test done on Coordination among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 0.339 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD = 0.298 & p= 0.000) and between Under 15 years and Under 17 years (MD = 0.396 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. While on the other hand, no significant differences in means were found among Under 15 years and Under 16 years (MD = 0.042 & p= 0.730) and also between Under 14 years and Under 17 years (MD = 0.057 & p= 0.488) and between Under 16 years and Under 17 years (MD = 0.099 & p= 0.068), as the p-value obtained were more than 0.05, the level of significance set for this study. The graphical representation of the means on Coordination among different age groups irrespective of gender and type of school is presented in Figure 48.

Since the F-ratio mentioned in table 42 related to the type of school was found to be significant  $F_{(2,2388)} = 78.679$ ,  $p=0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 44.

**Table 44**

*Tukey HSD Post-hoc test done on Coordination among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (20.018)	Govt (20.286)	0.269*	.0349	0.000	-.350	-.187
	Private (19.853)	0.165*	.0349	0.000	.083	.247
Govt (20.286)	Private (19.853)	0.434*	.0349	0.000	.352	.516

Based on observed means.

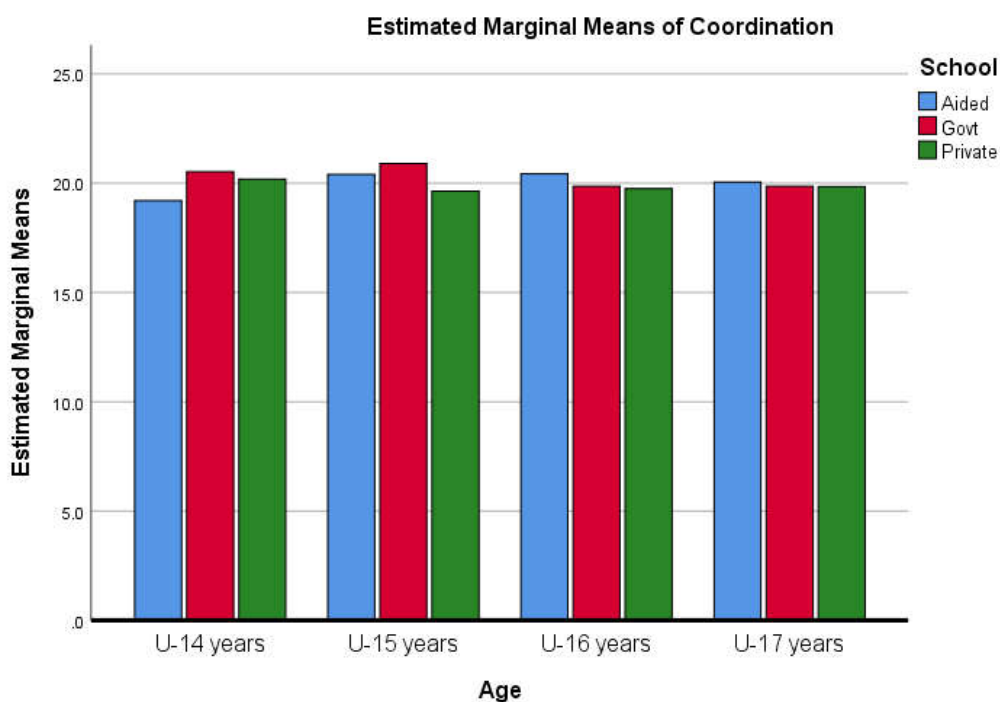
The error term is Mean Square(Error) = 0.487.

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

Table 44 related to post-hoc test done on Coordination among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 0.269 & p= 0.000), between Aided and Private schools (MD = 0.165 & p =0.000) and between Government and Private schools (MD = 0.434 & p = 0.000) as the p-values obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Coordination among different types of schools irrespective of age and gender is presented in Figure 48.

**Figure 48**

*Graphical representation of means on Coordination among different types of school irrespective of age and gender*



**Table 45**

*Two-way Analysis of variance done on Endurance among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18690412.500 <sup>a</sup>	11	1699128.409	15.570	.000
Intercept	9235134337.500	1	9235134337.500	84624.162	.000
Age	14709412.500	3	4903137.500	44.929*	0.000
School	6100.000	2	3050.000	0.028	0.972
Age * School	3974900.000	6	662483.333	6.071+	0.000
Error	260605250.000	2388	109131.177		
Total	9514430000.000	2400			
Corrected Total	279295662.500	2399			

a. R Squared = 0.067 (Adjusted R Squared = 0.063)

Table 45 related to the Two way ANOVA done on Endurance across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 44.929$ ,  $p = 0.000$  and that for interaction effect as  $F_{(6,2388)} = 6.071$ ,  $p = 0.000$ . On the other hand, no significant mean difference was found among schools as the obtained  $F_{(2,2388)}$  ratio was 0.28 with p-value as 0.972.

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 44.929$ ,  $p = 0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 46.

**Table 46**

*Tukey HSD Post-hoc test done on Endurance among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (1895)	Under 15 years (1926.667)	31.67	19.073	0.345	-80.70	17.37
	Under 16 years (1929.667)	34.67	19.073	0.265	-83.70	14.37
	Under 17 years (2095.167)	200.17*	19.073	0.000	-249.20	-151.13
U-15 years (1926.667)	Under 16 years (1929.667)	3.00	19.073	0.999	-52.03	46.03
	Under 17 years (2095.167)	168.50*	19.073	0.000	-217.53	-119.47
U-16 years (1929.667)	Under 17 years (2095.167)	165.50*	19.073	0.000	-214.53	-116.47

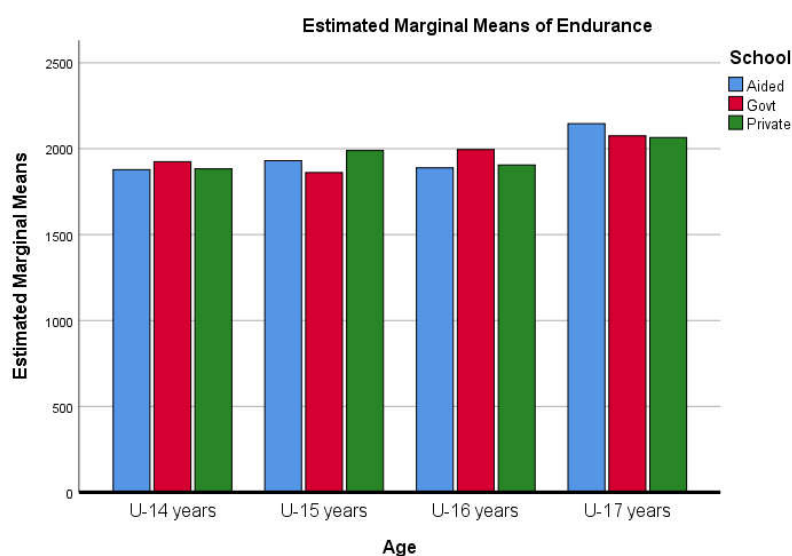
Based on observed means.  
The error term is Mean Square(Error) = 109131.177.  
\*. The mean difference is significant at the 0.05 level.

Table 46 related to post-hoc test done on Endurance among different age groups irrespective of gender and type of school do shows significant mean differences between Under 14 years and Under 17 Years (MD = 200.17 & p= 0.000). Besides, significant differences were also found between Under 15 years and Under 17 years (MD = 168.50& p= 0.000). Apart from that, significant mean differences were also found between Under 16 years and Under 17 years (MD = 165.50& p= 0.000), as the p-values obtained were all less than 0.05, the level of significance set for this study. On the other hand, no significant differences were found between Under 14 years with other groups such as Under 15 years (MD = 31.67 & p=0.345), and Under 16 years (MD = 34.67 & p=0.265) and also between Under 15 years and Under 16 years (MD = 3.00 & p= 0.999), as the p-values obtained were all greater than 0.05, the level of significance set for this study. The graphical representation of

the means on Endurance among different age groups irrespective of gender and type of school is presented in Figure 49.

**Figure 49**

*Graphical representation of means on Endurance among different types of school irrespective of age and gender*



**Table 47**

*Two-way Analysis of variance done on Explosive power 1 among different age groups and type of schools irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4004.130 <sup>a</sup>	11	364.012	32.857	.000
Intercept	6409973.760	1	6409973.760	578581.558	.000
Age	2084.517	3	694.839	62.718*	0.000
School	1072.353	2	536.176	48.397*	0.000
Age * School	847.261	6	141.210	12.746*	0.000
Error	26456.110	2388	11.079		
Total	6440434.000	2400			
Corrected Total	30460.240	2399			

a. R Squared = 0.131 (Adjusted R Squared = 0.127)

Table 47 related to the Two way ANOVA done on Explosive power 1 across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 62.718$ ,  $p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 48.397$ ,  $p=0.000$  and that for interaction effect as  $F_{(6,2388)} = 12.746$ ,  $p=0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 62.718$ ,  $p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 48.

**Table 48**

*Tukey HSD Post-hoc test done on Explosive power 1 among different age groups irrespective of gender and type of schools*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (51.398)	Under 15 years (50.387)	1.01*	.192	0.000	.52	1.51
	Under 16 years (51.977)	0.58*	.192	0.014	-1.07	-.08
	Under 17 years (52.958)	1.56*	.192	0.000	-2.05	-1.07
Under 15 years (50.387)	Under 16 years (51.977)	1.59*	.192	0.000	-2.08	-1.10
	Under 17 years (52.958)	2.57*	.192	0.000	-3.07	-2.08
Under 16 years (51.977)	Under 17 years (52.958)	0.98*	.192	0.000	-1.48	-.49

Based on observed means.

The error term is Mean Square(Error) = 11.079.

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



Table 48 related to post-hoc test done on Explosive power 1 among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD =1.01 & p= 0.000), Under 16 years (MD = 0.58 & p= 0.014), and Under 17 years (MD =1.56 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD = 1.59 & p=0.000), between Under 15 years and Under 17 years (MD = 2.57 & p= 0.000) and also between Under 16 years and Under 17 years (MD = 0.98 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. The graphical representation of the means on Explosive power 1 among different age groups irrespective of gender and type of school is presented in Figure 50.

Since the F-ratio mentioned in table 48 related to the type of school was found to be significant  $F_{(2,2388)} = 48.397$ ,  $p=0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 49.

**Table 49**

*Tukey HSD Post-hoc test done on Explosive power 1 among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (52.174)	Govt (50.735)	1.44*	.166	0.000	1.05	1.83
	Private (52.131)	0.04	.166	0.965	-.35	.43
Govt (50.735)	Private (52.131)	1.40*	.166	0.000	-1.79	-1.01

Based on observed means.

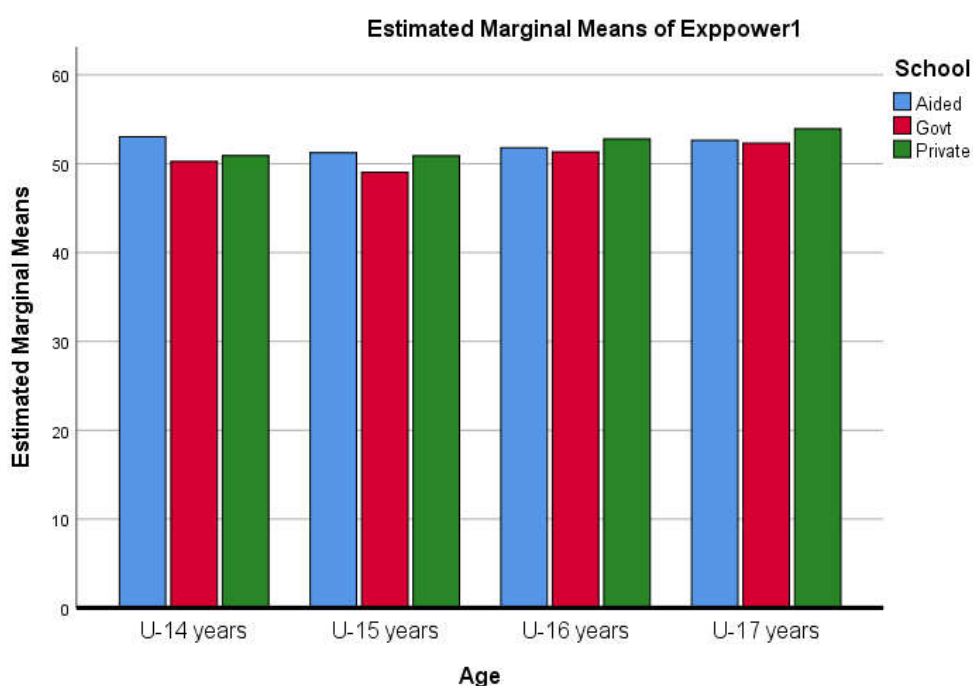
The error term is Mean Square(Error) = 11.079.

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

Table 49 related to post-hoc test done on Explosive power 1 among different types of school irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 0.144 & p = 0.00), Government and Private schools (MD = 1.40 & p = 0.000), as the p-values obtained were much less than 0.05, the level of significance set for this study. While on the other hand, no significant difference in mean was found among Aided schools and Private schools (MD = 0.04 & p=0.965) which was more than 0.05, the level of significance set for this study. The graphical representation of the means on Explosive power 1 among different types of schools irrespective of age and gender is presented in Figure 50.

**Figure 50**

*Graphical representation of means on Explosive power 1 among different types of school irrespective of age and gender*



**Table 50**

*Two-way Analysis of variance done on Explosive power 2 among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	22013.795 <sup>a</sup>	11	2001.254	69.466	.000
Intercept	36725540.415	1	36725540.415	1274795.892	.000
Age	18596.442	3	6198.814	215.170*	0.000
School	2639.858	2	1319.929	45.817*	0.000
Age * School	777.496	6	129.583	4.498*	0.000
Error	68795.790	2388	28.809		
Total	36816350.000	2400			
Corrected Total	90809.585	2399			

a. R Squared = .242 (Adjusted R Squared = .239)

Table 50 related to the Two way ANOVA done on Explosive power 2 across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 215.170, p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 48.817, p=0.000$  and that for interaction effect as  $F_{(6,2388)}$  as 4.498,  $p= 0.000$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 215.170, p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and types of school is presented in table 51.

**Table 51**

*Tukey HSD Post-hoc test done on Explosive power 2 among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Under 14 years (120.088)	Under 15 years (122.137)	2.05*	.310	0.000	-2.85	-1.25
	Under 16 years (125.277)	5.19*	.310	0.000	-5.99	-4.39
	Under 17 years (127.308)	7.22*	.310	0.000	-8.02	-6.42
Under 15 years (122.137)	Under 16 years (125.277)	3.14*	.310	0.000	-3.94	-2.34
	Under 17 years (127.308)	5.17*	.310	0.000	-5.97	-4.37
Under 16 years (125.277)	Under 17 years (127.308)	2.03*	.310	0.000	-2.83	-1.23

Based on observed means.

The error term is Mean Square(Error) = 28.809.

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

Table 51 related to post-hoc test done on Explosive power 2 among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 2.05 & p= 0.000), Under 16 years (MD = 5.19 & p= 0.000), and Under 17 years (MD = 7.22 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD = 2.05 & p= 0.000) and between Under 15 years and Under 17 years (MD = 5.17 & p= 0.000) and between Under 16 years and Under 17 years (MD = 2.03 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. The graphical representation of the means on Explosive power 2 among different age groups irrespective of gender and type of school is presented in Figure 51.

Since the F-ratio mentioned in table 51 related to the type of school was found to be significant  $F_{(2,2388)} = 48.817$ ,  $p=0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 52.

**Table 52**

*Tukey HSD Post-hoc test done on Explosive power 2 among different types of schools irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (124.100)	Govt (122.266)	1.83*	.268	0.000	1.20	2.46
	Private (124.741)	0.64*	.268	0.045	-1.27	-.01
Govt (122.266)	Private (124.741)	2.48*	.268	0.000	-3.10	-1.85

Based on observed means.

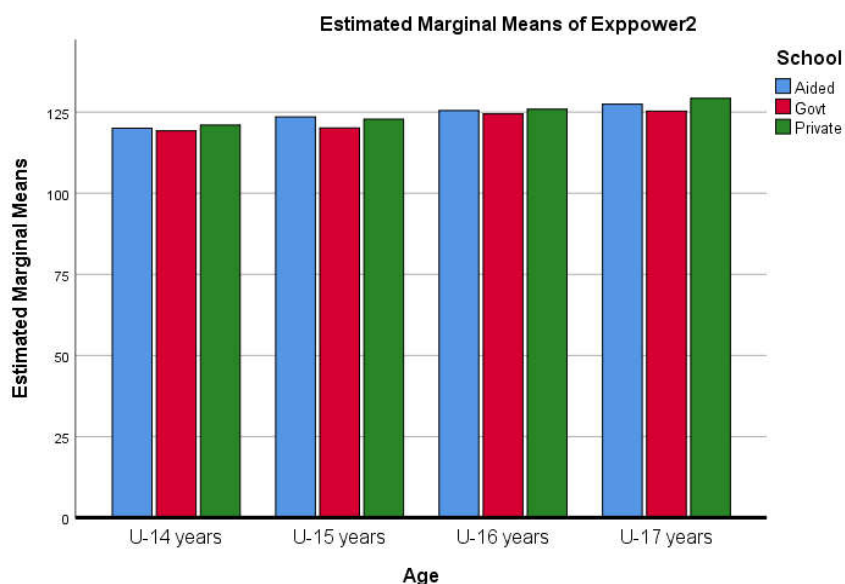
The error term is Mean Square (Error) = 28.809.

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

Table 52 related to post-hoc test done on Explosive power 2 among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 1.83 &  $p = 0.000$ ), between Aided and Private schools (MD = 0.64 &  $p=0.45$ ) and also between Government and Private schools (MD = 2.48 &  $p=0.000$ ), as all the p-values obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Explosive power 2 among different types of schools irrespective of age and gender is presented in Figure 51.

**Figure 51**

*Graphical representation of means on Explosive power 2 among different types of school irrespective of age and gender*

**Table 53**

*Two-way Analysis of variance done on Reaction time among different age groups and type of school irrespective of gender*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	66356.025 <sup>a</sup>	11	6032.366	544.948	.000
Intercept	2656143.735	1	2656143.735	239949.068	.000
Age	39531.338	3	13177.113	1190.386*	0.000
School	26582.822	2	13291.411	1200.711*	0.000
Age * School	241.864	6	40.311	3.642*	0.001
Error	26434.240	2388	11.070		
Total	2748934.000	2400			
Corrected Total	92790.265	2399			

a. R Squared = 0.715 (Adjusted R Squared = 0.714)

Table 53 related to the Two way ANOVA done on Reaction time across the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years (irrespective of gender and type of school) shows significant differences in means as the obtained F ratio was  $F_{(3,2388)} = 1190.386$ ,  $p=0.000$  and F ratio that for among the three types of school such as Government, Aided and Private (irrespective of age and gender) as  $F_{(2,2388)} = 1200.711$ ,  $p=0.000$  and that for interaction effect as  $F_{(6,2388)} = 3.642$ ,  $p=0.001$ .

Since the F-ratio related to age was found to be significant ( $F_{(3,2388)} = 1190.386$ ,  $p=0.000$ ), in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different age groups irrespective of gender and type of school and is presented in table 54.

**Table 54**

*Tukey HSD Post-hoc test done on Reaction time among different age groups irrespective of gender and type of school*

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	Under 15 years (35.835)	2.35*	.192	0.000	1.85	2.84
Under 14 years (38.182)	Under 16 years (31.418)	6.76*	.192	0.000	6.27	7.26
	Under 17 years (27.635)	10.55*	.192	0.000	10.05	11.04
Under 15 years (35.835)	Under 16 years (31.418)	4.42*	.192	0.000	3.92	4.91
	Under 17 years (27.635)	8.20*	.192	0.000	7.71	8.69
Under 16 years (31.418)	Under 17 years (27.635)	3.78*	.192	0.000	3.29	4.28

Based on observed means.

The error term is Mean Square (Error) = 11.070.

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

Table 54 related to post-hoc test done on Reaction time among different age groups irrespective of gender and type of school do shows significant differences in means between Under 14 years with other groups such as Under 15 years (MD = 2.35 & p=0.000), Under 16 years (MD = 6.76 & p=0.000) and Under 17 years (MD = 10.55 & p= 0.000). Apart from that, significant mean differences were also found between Under 15 years and Under 16 years (MD = 4.42 & p= 0.000), Under 15 years and Under 17 years (MD = 8.20 & p= 0.000) and also between Under 16 years and Under 17 years (MD = 3.78 & p= 0.000), as all the p-values obtained were less than 0.05, the level of significance set for this study. The graphical representation of the means on Reaction time among different age groups irrespective of gender and type of school is presented in Figure 52.

Since the F-ratio mentioned in table 54 related to the type of school was found to be significant  $F_{(2,2388)} = 1200.711$ ,  $p=0.000$ , in order to verify whether the differences really exist or not, the Tukey HSD Post-hoc test was administered among different type of schools irrespective of age and gender and is presented in table 55.

**Table 55**

*Tukey HSD Post-hoc test done on Reaction time among different types of school irrespective of age and gender*

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Aided (37.309)	Govt (33.336)	3.97*	.166	0.000	3.58	4.36
	Private (29.158)	8.15*	.166	0.000	7.76	8.54
Govt (33.336)	Private (29.158)	4.18*	.166	0.000	3.79	4.57

Based on observed means.

The error term is Mean Square(Error) = 11.070.

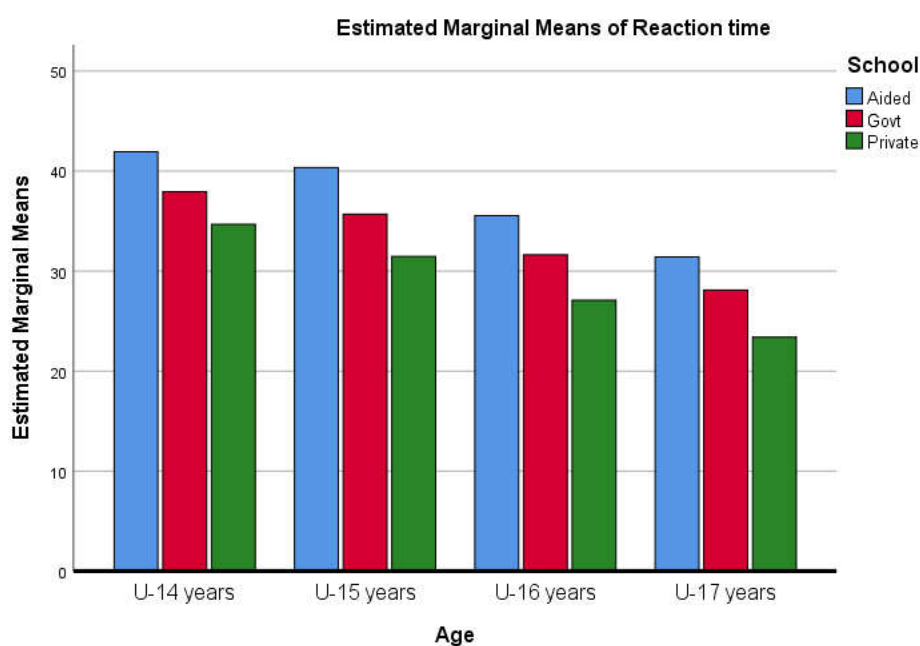
\*, The mean difference is significant at the 0.05 level.



Table 55 related to post-hoc test done on Reaction time among different types of schools irrespective of age and gender do shows significant differences in means between Aided and Government schools (MD = 3.97 &  $p=0.000$ ), between Aided schools and Private schools (MD = 8.15 &  $p=0.000$ ) and also between Government schools and Private schools (MD = 4.18 &  $p=0.000$ ), as the p-values obtained were much less than 0.05, the level of significance set for this study. The graphical representation of the means on Reaction time among different types of schools irrespective of age and gender is presented in Figure 52.

**Figure 52**

*Graphical representation of means on Reaction time among different types of school irrespective of age and gender*



#### 4.4 Chi-Square Analysis

**Table 56**

*Chi square analysis done on Scoliosis among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	179	194	194	179	746	3.659 <sup>a,b</sup>
Posture	Expected Count	186.5	186.5	186.5	186.5	746	
Fair	Count	219	211	198	204	832	
Posture	Expected Count	208	208	208	208	832	
Good	Count	202	195	208	217	822	
Posture	Expected Count	205.5	205.5	205.5	205.5	822	

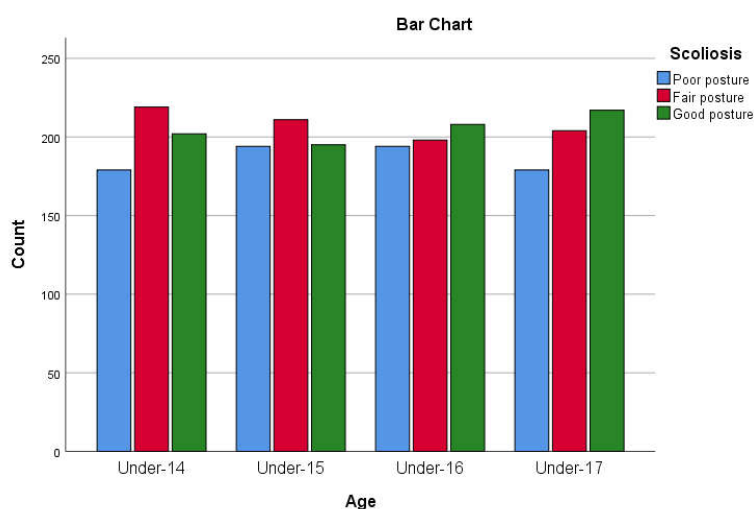
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 186.50

b. Asymptotic Significance (2-sided) = 0.723

The table 56 related to chi-square analysis done on Scoliosis among different age groups irrespective of gender and types of school do reveals a chi-square value of 3.659 and the asymptotic significance (2 sided) value as 0.723, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Scoliosis and different age groups irrespective of gender and types of school. The graphical representation on the count of Scoliosis (such as poor posture, fair posture and good posture) among different age groups is presented in figure 53.

**Figure 53**

*The graphical representation on the count of Scoliosis among different age groups*



**Table 57**

*Chi square analysis done on Kyphosis among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor Posture	Count	173	168	194	195	730	6.551 <sup>a,b</sup>
	Expected Count	182.5	182.5	182.5	182.5	730	
Fair Posture	Count	204	224	206	193	830	
	Expected Count	207.5	207.5	207.5	207.5	830	
Good Posture	Count	223	208	200	209	840	
	Expected Count	210.0	210.0	210.0	210.0	840	

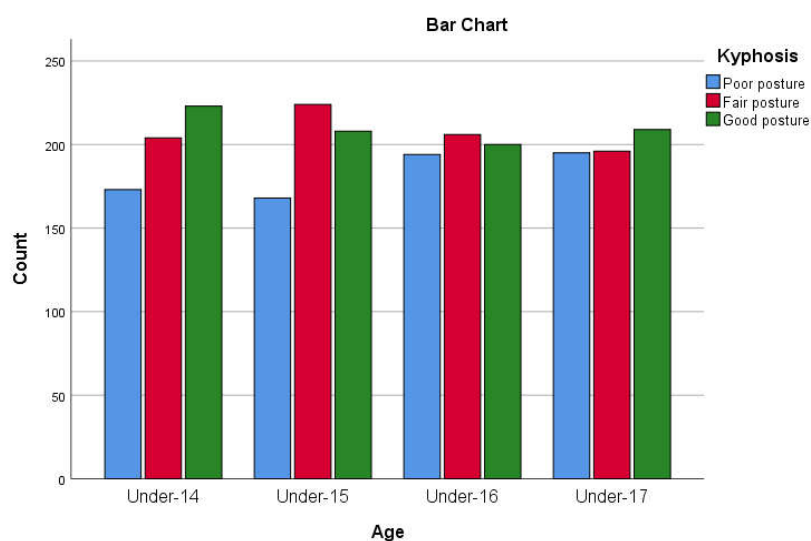
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 182.50

b. Asymptotic Significance (2-sided) = 0.364

The table 57 related to chi-square analysis done on Kyphosis among different age groups irrespective of gender and type of school do reveals a chi-square value of 6.551 and the asymptotic significance (2 sided) value as 0.364, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Kyphosis and different age groups irrespective of gender and type of school. The graphical representation on the count of Kyphosis (such as poor posture, fair posture and good posture) among different age groups is presented in figure 54.

**Figure 54**

*The graphical representation on the count of Kyphosis among different age groups*



**Table 58**

*Chi square analysis done on Lordosis among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	165	187	190	180	722	5.053 <sup>a,b</sup>
Posture	Expected Count	180.5	180.5	180.5	180.5	722.0	
Fair	Count	215	208	202	192	817	
Posture	Expected Count	204.3	204.3	204.3	204.3	817.0	
Good	Count	220	205	208	228	861	
Posture	Expected Count	215.3	215.3	215.3	215.3	861.0	

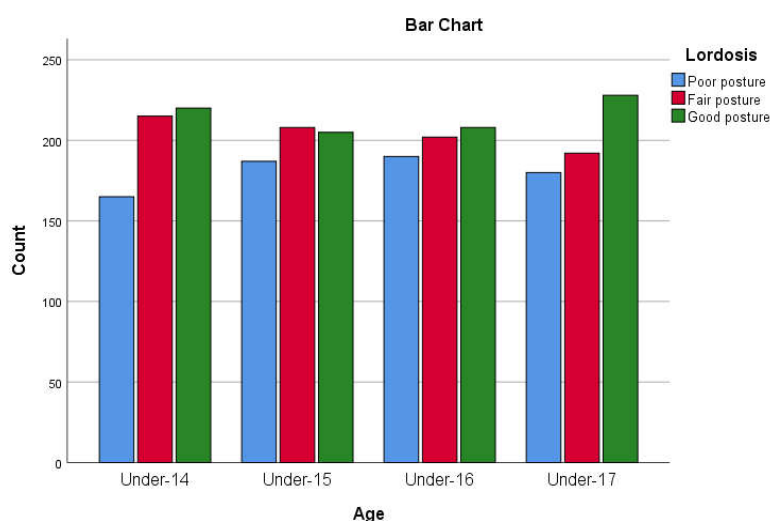
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 180.50

b. Asymptotic Significance (2-sided) = 0.537

The table 58 related to chi-square analysis done on Lordosis among different age groups irrespective of gender and type of school do reveals a chi-square value of 5.053 and the asymptotic significance (2 sided) value as 0.537, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Lordosis and different age groups irrespective of gender and type of school. The graphical representation on the count of Lordosis (such as poor posture, fair posture and good posture) among different age groups is presented in figure 55.

**Figure 55**

*The graphical representation on the count of Lordosis among different age groups*



**Table 59**

*Chi square analysis done on Round shoulder among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	171	180	176	184	711	1.258 <sup>a,b</sup>
Posture	Expected Count	177.8	177.8	177.8	177.8	711.0	
Fair	Count	206	200	209	195	810	
Posture	Expected Count	202.5	202.5	202.5	202.5	202.5	
Good	Count	223	220	215	221	879	
Posture	Expected Count	219.8	219.8	219.8	219.8	879.0	

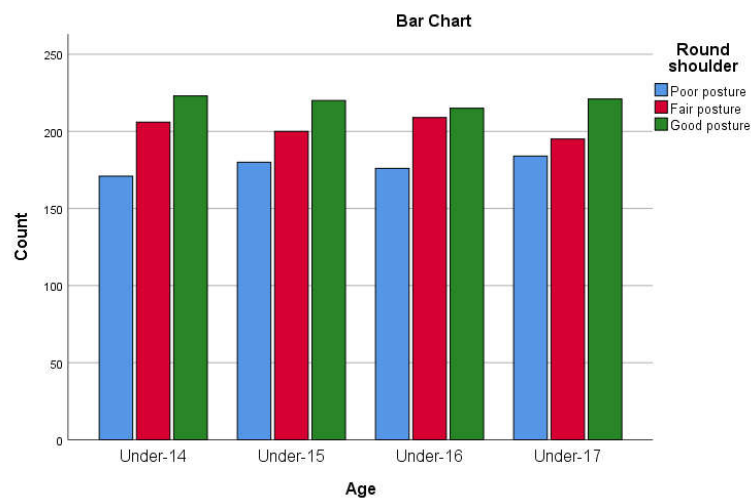
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 177.75

b. Asymptotic Significance (2-sided) = 0.974

The table 59 related to chi-square analysis done on Round shoulder among different age groups irrespective of gender and type of school do reveals a chi-square value of 1.258 and the asymptotic significance (2 sided) value as 0.974, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Round shoulder and different age groups irrespective of gender and type of school. The graphical representation on the count of Round shoulder (such as poor posture, fair posture and good posture) among different age groups is presented in figure 56.

**Figure 56**

*The graphical representation on the count of Round shoulder among different age groups*



**Table 60**

*Chi square analysis done on Bow leg among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	172	183	161	162	678	5.635 <sup>a,b</sup>
Posture	Expected Count	169.5	169.5	169.5	169.5	678.0	
Fair	Count	211	191	196	192	790	
Posture	Expected Count	197.5	197.5	197.5	197.5	790.0	
Good	Count	217	226	243	246	932	
Posture	Expected Count	233.0	233.0	233.0	233.0	932.0	

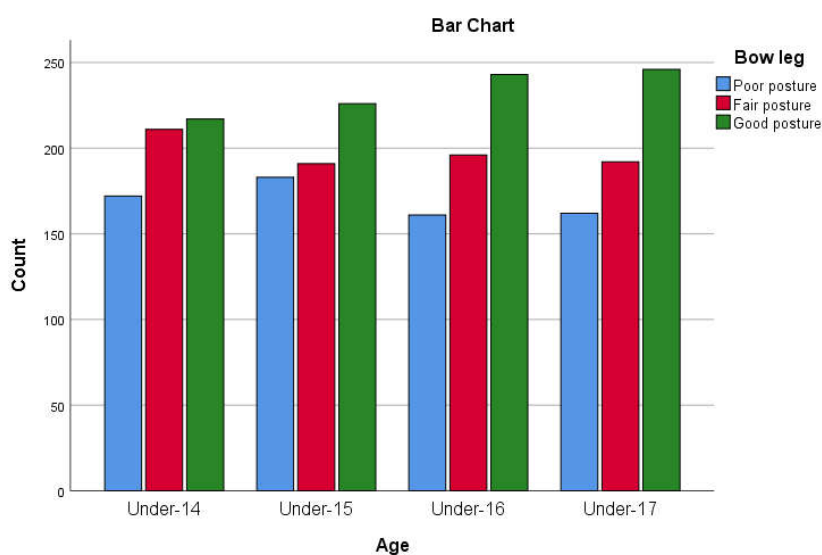
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 169.50

b. Asymptotic Significance (2-sided) = 0.465

The table 60 related to chi-square analysis done on Bow leg among different age groups irrespective of gender and type of school do reveals a chi-square value of 5.635 and the asymptotic significance (2 sided) value as 0.465, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Bow leg and different age groups irrespective of gender and type of school. The graphical representation on the count of Bow leg (such as poor posture, fair posture and good posture) among different age groups is presented in figure 57.

**Figure 57**

*The graphical representation on the count of Bow leg among different age groups*



**Table 61**

*Chi square analysis done on Knock knee among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor Posture	Count	160	169	159	148	636	5.284 <sup>a,b</sup>
	Expected Count	159.0	159.0	159.0	159.0	636.0	
Fair Posture	Count	208	192	194	194	776	
	Expected Count	194.0	194.0	194.0	194.0	776.0	
Good Posture	Count	232	239	253	264	988	
	Expected Count	247.0	247.0	247.0	247.0	988.0	

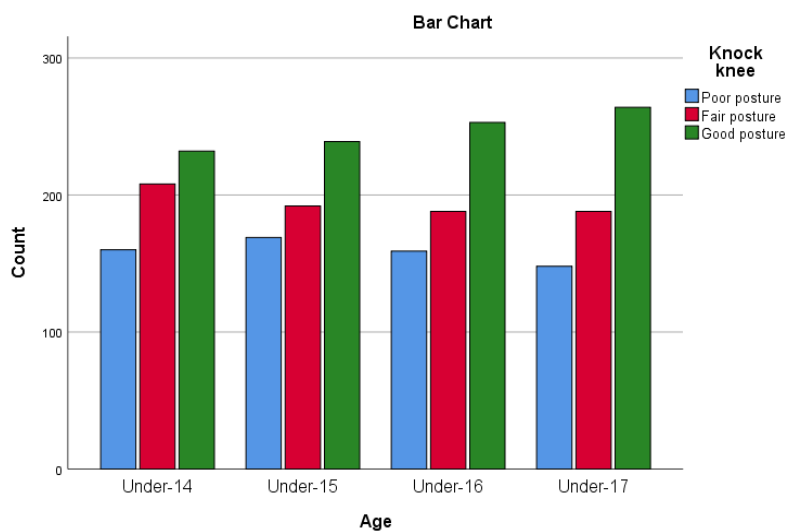
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 159.00

b. Asymptotic Significance (2-sided) = 0.508

The table 61 related to chi-square analysis done on Knock knee among different age groups irrespective of gender and type of school do reveals a chi-square value of 5.284 and the asymptotic significance (2 sided) value as 0.508, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Knock knee and different age groups irrespective of gender and type of school. The graphical representation on the count of Knock knee (such as poor posture, fair posture and good posture) among different age groups is presented in figure 58.

**Figure 58**

*The graphical representation on the count of Bow leg among different age groups*



**Table 62**

*Chi square analysis done on Claw foot among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	155	159	147	173	634	5.661 <sup>a,b</sup>
Posture	Expected Count	158.5	158.5	158.5	158.5	634.0	
Fair	Count	188	186	212	186	772	
Posture	Expected Count	193.0	193.0	193.0	193.0	772.0	
Good	Count	257	255	241	241	994	
Posture	Expected Count	248.5	248.5	248.5	248.5	994.0	

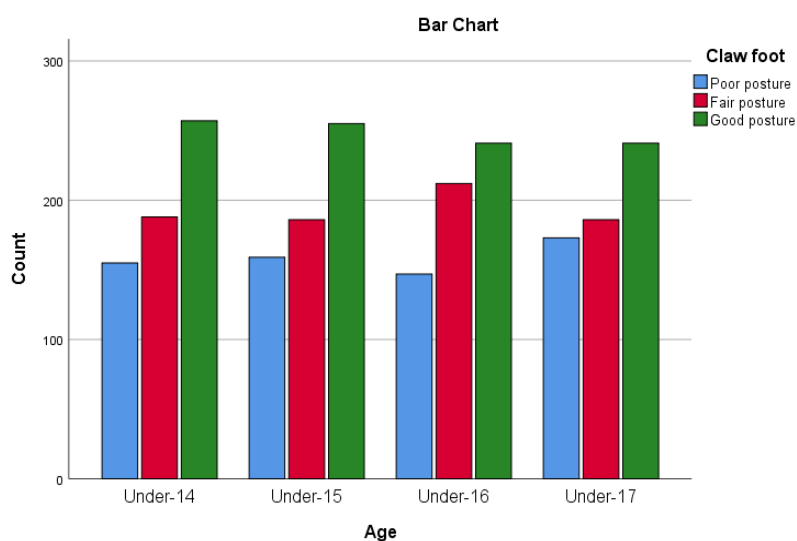
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 158.50

b. Asymptotic Significance (2-sided) (df b, 1) = 0.462

The table 62 related to chi-square analysis done on Claw foot among different age groups irrespective of gender and type of school do reveals a chi-square value of 5.661 and the asymptotic significance (2 sided) value as 0.462, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Claw foot and different age groups irrespective of gender and type of school. The graphical representation on the count of Claw foot (such as poor posture, fair posture and good posture) among different age groups is presented in figure 59.

**Figure 59**

*The graphical representation on the count of Claw foot among different age groups*





**Table 63**

*Chi square analysis done on Flat foot among different age groups irrespective of gender and type of school*

		Under 14	Under 15	Under 16	Under 17	Total	$\chi^2$
Poor	Count	146	161	159	172	638	3.405 <sup>a,b</sup>
Posture	Expected Count	159.5	159.5	159.5	159.5	638.0	
Fair	Count	194	195	198	187	774	
Posture	Expected Count	193.5	193.5	193.5	193.5	774.0	
Good	Count	260	244	243	241	988	
Posture	Expected Count	247.0	247.0	247.0	247.0	988.0	

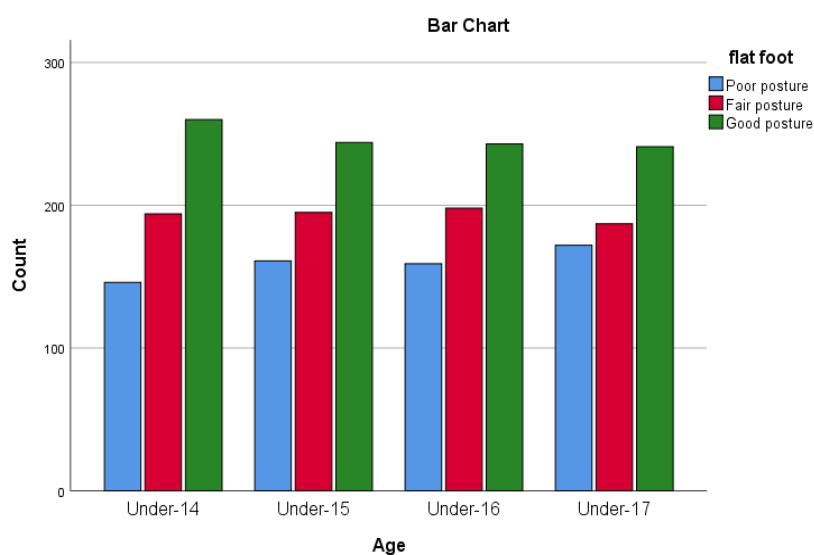
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 159.50

b. Asymptotic Significance (2-sided) (df b, 1) = 0.757

The table 63 related to chi-square analysis done on Flat foot among different age groups irrespective of gender and type of school do reveals a chi-square value of 3.405 and the asymptotic significance (2 sided) value as 0.757, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Flat foot and different age groups irrespective of gender and type of school. The graphical representation on the count of Flat foot (such as poor posture, fair posture and good posture) among different age groups is presented in figure 60.

**Figure 60**

*The graphical representation on the count of Flat foot among different age groups*



**Table 64**

*Chi square analysis done on Scoliosis among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	381	365	746	1.286 <sup>a,b</sup>
	Expected Count	373.0	373.0	746.0	
Fair Posture	Count	421	411	832	
	Expected Count	416.0	416.0	832.0	
Good Posture	Count	398	424	822	
	Expected Count	411.0	411.0	822.0	

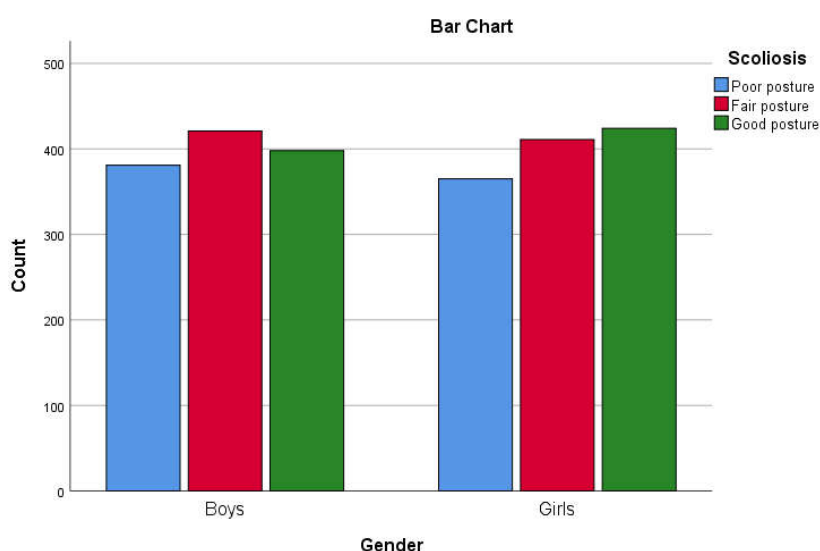
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 373.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.526

The table 64 related to chi-square analysis done on Scoliosis among different gender groups irrespective of age and type of school do reveals a chi-square value of 1.286 and the asymptotic significance (2 sided) value as 0.526, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Scoliosis and different gender groups irrespective of age and type of school. The graphical representation on the count of Scoliosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 61.

**Figure 61**

*The graphical representation on the count of Scoliosis among different gender groups*



**Table 65**

*Chi square analysis done on Kyphosis among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	383	357	730	0.541 <sup>a,b</sup>
	Expected Count	365.0	365.0	730.0	
Fair Posture	Count	413	417	830	
	Expected Count	415.0	415.0	830.0	
Good Posture	Count	414	426	840	
	Expected Count	420.0	420.0	840.0	

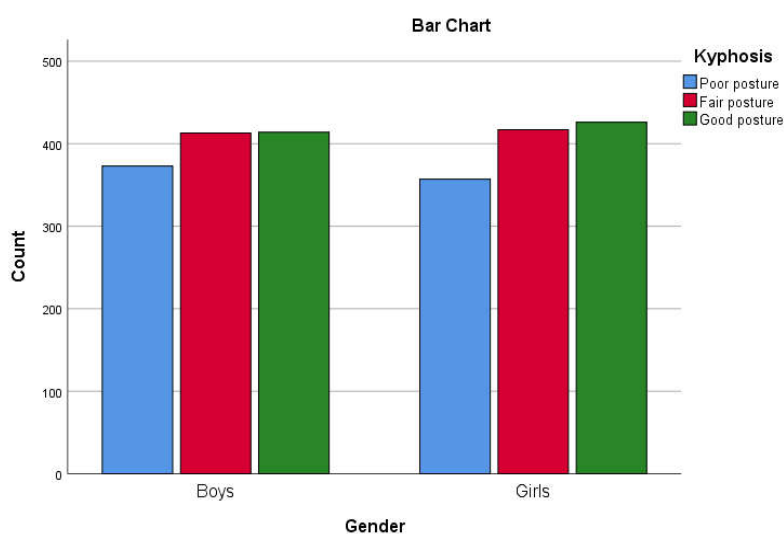
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 365.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.763

The table 65 related to chi-square analysis done on Kyphosis among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.541 and the asymptotic significance (2 sided) value as 0.763, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Kyphosis and different gender groups irrespective of age and type of school. The graphical representation on the count of Kyphosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 62.

**Figure 62**

*The graphical representation on the count of Kyphosis among different gender groups*



**Table 66**

*Chi square analysis done on Lordosis among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	364	358	722	0.837 <sup>a,b</sup>
	Expected Count	361.0	361.0	722.0	
Fair Posture	Count	416	401	817	
	Expected Count	408.5	408.5	817.0	
Good Posture	Count	420	441	861	
	Expected Count	430.5	430.5	861.0	

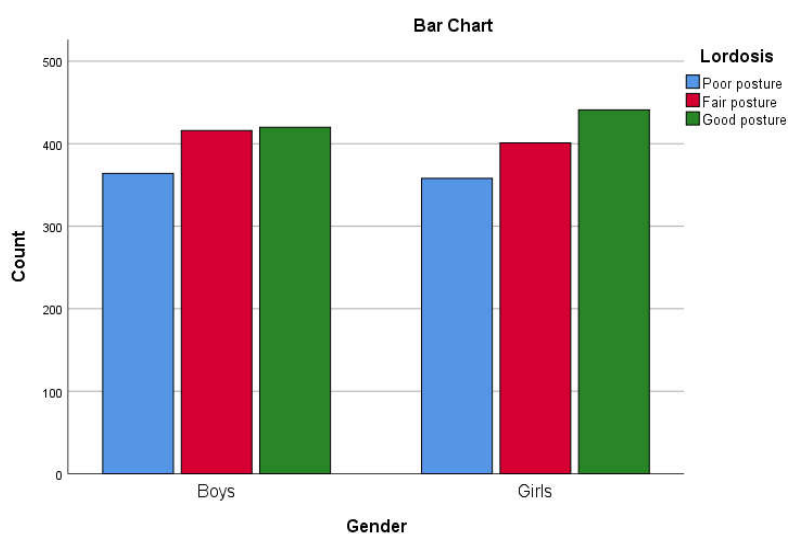
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 361.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.658

The table 66 related to chi-square analysis done on Lordosis among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.837 and the asymptotic significance (2 sided) value as 0.658, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Lordosis and different gender groups irrespective of age and type of school. The graphical representation on the count of Lordosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 63.

**Figure 63**

*The graphical representation on the count of Lordosis among different gender groups*



**Table 67**

*Chi square analysis done on Round shoulder among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	360	351	711	0.169 <sup>a,b</sup>
	Expected Count	355.5	355.5	711.0	
Fair Posture	Count	402	408	810	
	Expected Count	405.0	405.0	810.0	
Good Posture	Count	438	441	879	
	Expected Count	439.5	439.5	879.0	

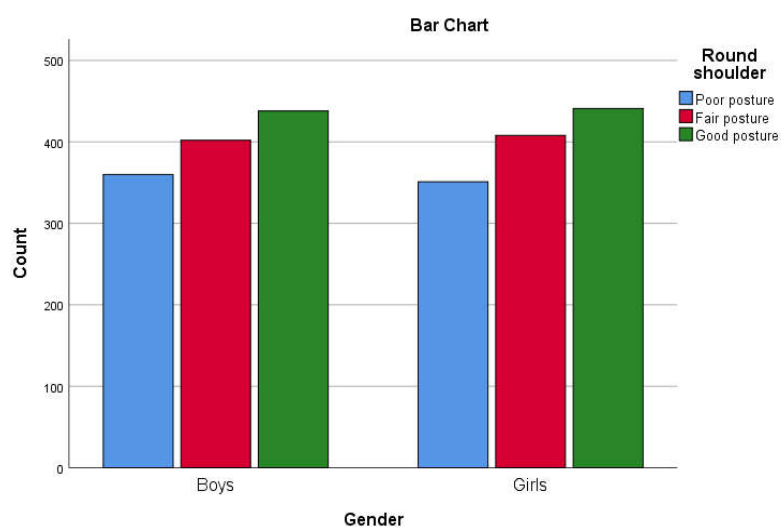
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 355.50

b. Asymptotic Significance (2-sided) (df b, 1) = 0.919

The table 67 related to chi-square analysis done on Round shoulder among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.169 and the asymptotic significance (2 sided) value as 0.919, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Round shoulder and different gender groups irrespective of age and type of school. The graphical representation on the count of Round shoulder (such as poor posture, fair posture and good posture) among different gender is presented in figure 64.

**Figure 64**

*The graphical representation on the count of Round shoulder among different gender groups*



**Table 68**

*Chi square analysis done on Bow leg among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	353	325	678	2.628 <sup>a,b</sup>
	Expected Count	339.0	339.0	678.0	
Fair Posture	Count	399	391	790	
	Expected Count	395.0	395.0	790.0	
Good Posture	Count	448	484	932	
	Expected Count	466.0	466.0	932.0	

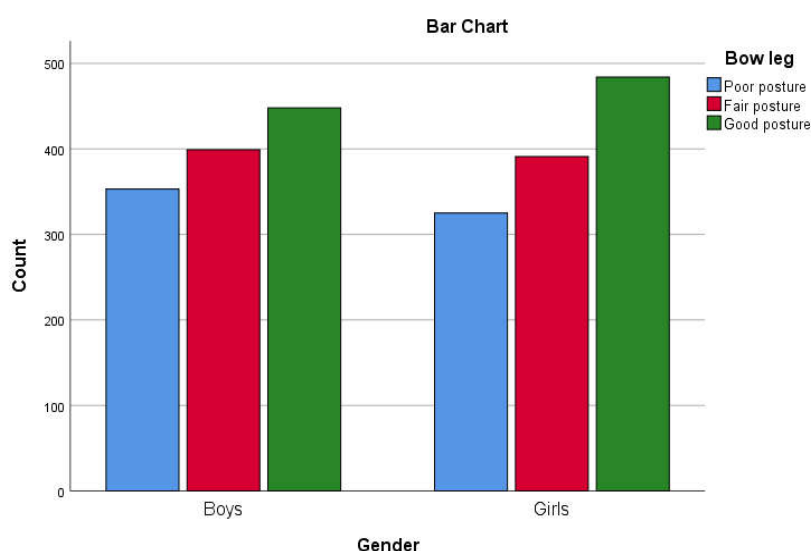
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 339.0

b. Asymptotic Significance (2-sided) (df b, 1) = 0.269

The table 68 related to chi-square analysis done on Bow leg among different gender groups irrespective of age and type of school do reveals a chi-square value of 2.628 and the asymptotic significance (2 sided) value as 0.269, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Bow leg and different gender groups irrespective of age and type of school. The graphical representation on the count of Bow leg (such as poor posture, fair posture and good posture) among different gender is presented in figure 65.

**Figure 65**

*The graphical representation on the count of Bow leg among different gender groups*



**Table 69**

*Chi square analysis done on Knock knee among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	325	311	636	0.759 <sup>a,b</sup>
	Expected Count	318.0	381.0	636.0	
Fair Posture	Count	391	385	776	
	Expected Count	388.0	388.0	776.0	
Good Posture	Count	484	504	988	
	Expected Count	494.0	494.0	988.0	

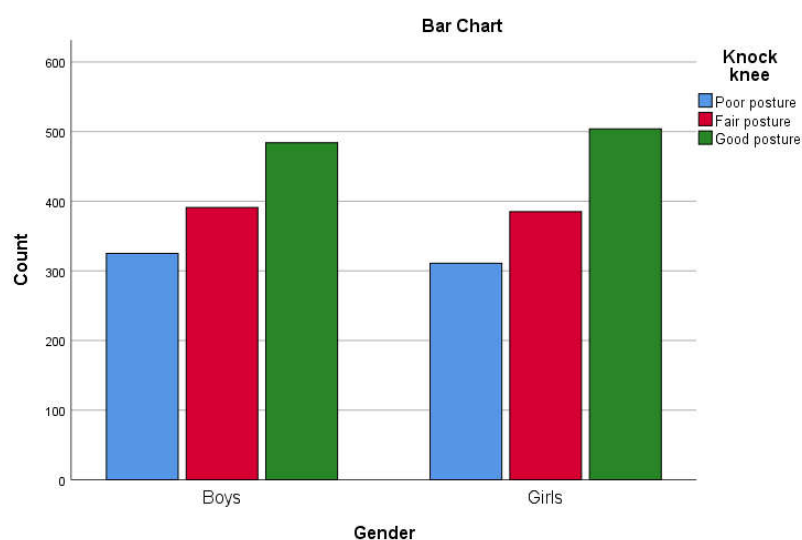
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 318.0

b. Asymptotic Significance (2-sided) (df b, 1) = 0.684

The table 69 related to chi-square analysis done on Knock knee among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.759 and the asymptotic significance (2 sided) value as 0.684, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Knock knee and different gender groups irrespective of age and type of school. The graphical representation on the count of Knock knee (such as poor posture, fair posture and good posture) among different gender is presented in figure 66.

**Figure 66**

*The graphical representation on the count of Knock knee among different gender groups*



**Table 70**

*Chi square analysis done on Claw foot among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	313	321	634	0.152 <sup>a,b</sup>
	Expected Count	317.0	317.0	634.0	
Fair Posture	Count	389	383	772	
	Expected Count	386.0	386.0	772.0	
Good Posture	Count	498	496	994	
	Expected Count	497.0	497.0	994.0	

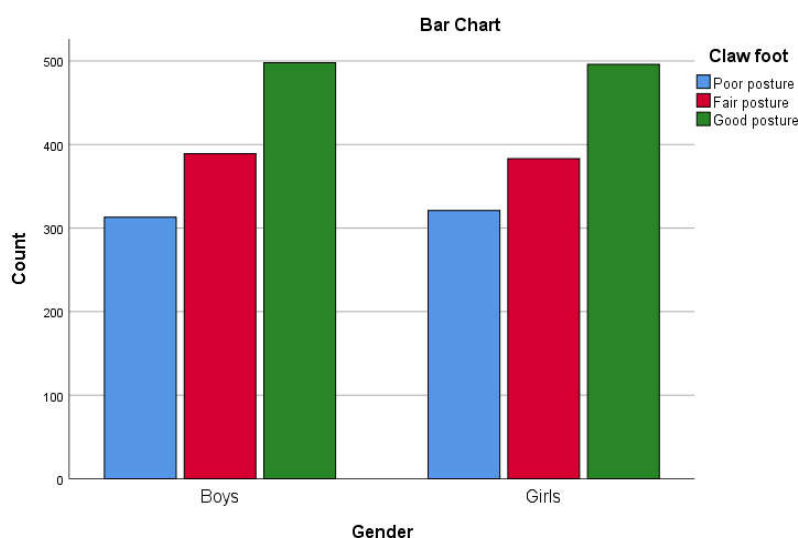
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 317.0

b. Asymptotic Significance (2-sided) (df b, 1) = 0.927

The table 70 related to chi-square analysis done on Claw foot among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.152 and the asymptotic significance (2 sided) value as 0.927, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Claw foot and different gender groups irrespective of age and type of school. The graphical representation on the count of Claw foot (such as poor posture, fair posture and good posture) among different gender is presented in figure 67.

**Figure 67**

*The graphical representation on the count of Claw foot among different gender groups*





**Table 71**

*Chi square analysis done on Flat foot among different gender groups irrespective of age and type of school*

		Boys	Girls	Total	$\chi^2$
Poor Posture	Count	316	322	638	0.178 <sup>a,b</sup>
	Expected Count	319.0	319.0	319.0	
Fair Posture	Count	385	389	774	
	Expected Count	387.0	387.0	774.0	
Good Posture	Count	499	489	988	
	Expected Count	494.0	494.0	988.0	

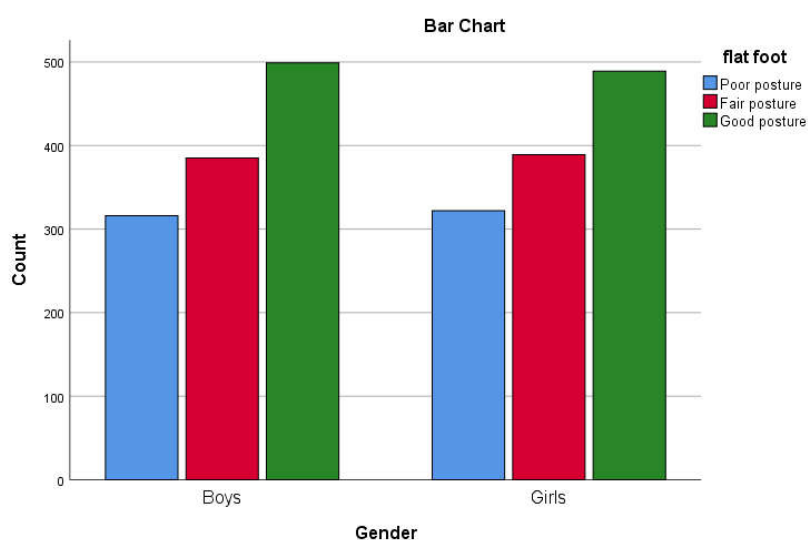
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 319.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.915

The table 71 related to chi-square analysis done on Flat foot among different gender groups irrespective of age and type of school do reveals a chi-square value of 0.178 and the asymptotic significance (2 sided) value as 0.915, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Flat foot and different gender groups irrespective of age and type of school. The graphical representation on the count of Flat foot (such as poor posture, fair posture and good posture) among different gender is presented in figure 68.

**Figure 68**

*The graphical representation on the count of Flat foot among different gender groups*



**Table 72**

*Chi square analysis done on Scoliosis among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	244	255	247	746	1.045 <sup>a,b</sup>
	Expected Count	248.7	248.7	248.7	746.0	
Fair Posture	Count	276	270	286	832	
	Expected Count	277.3	277.3	277.3	832.0	
Good Posture	Count	280	275	267	822	
	Expected Count	274.0	274.0	274.0	822.0	

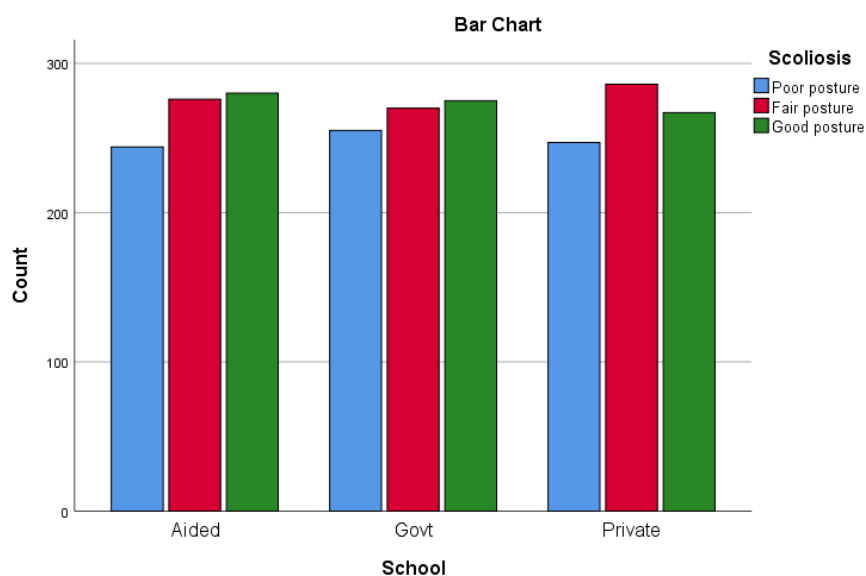
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 248.67

b. Asymptotic Significance (2-sided) (df b, 1) = 0.903

The table 72 related to chi-square analysis done on Scoliosis among different types of schools irrespective of age and gender do reveals a chi-square value of 1.045 and the asymptotic significance (2 sided) value as 0.903, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Scoliosis and different types of schools irrespective of age and gender. The graphical representation on the count of Scoliosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 69.

**Figure 69**

*The graphical representation on the count of Scoliosis among different types of schools*



**Table 73**

*Chi square analysis done on Kyphosis among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	256	256	218	730	7.912 <sup>a,b</sup>
	Expected Count	243.3	243.3	243.3	730.0	
Fair Posture	Count	270	283	277	830	
	Expected Count	276.7	276.7	276.7	830.0	
Good Posture	Count	274	261	305	840	
	Expected Count	280.0	280.0	280.0	840.0	

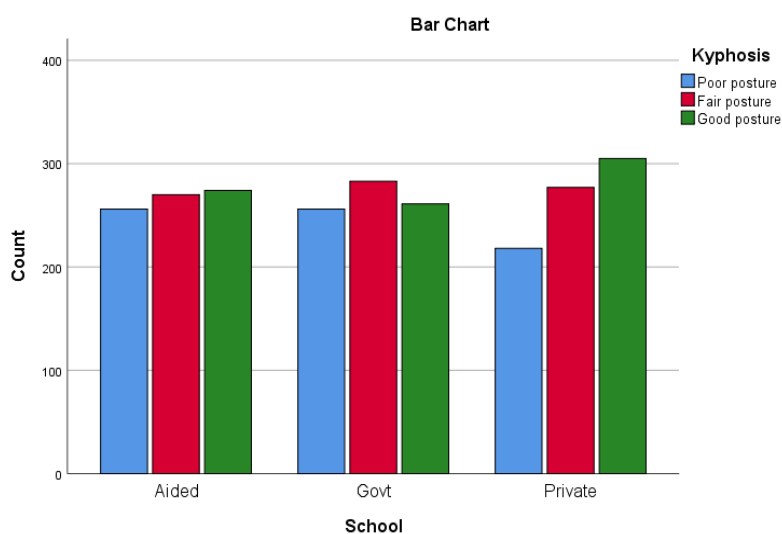
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 243.33

b. Asymptotic Significance (2-sided) (df b, 1) = 0.095

The table 73 related to chi-square analysis done on Kyphosis among different types of schools irrespective of age and gender do reveals a chi-square value of 7.912 and the asymptotic significance (2 sided) value as 0.095, which is more than 0.05, the level of significance set for this study. This shows that, there is no association between Kyphosis and different types of schools irrespective of age and gender. The graphical representation on the count of Kyphosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 70.

**Figure 70**

*The graphical representation on the count of Kyphosis among different types of schools*



**Table 74**

*Chi square analysis done on Lordosis among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	257	248	217	722	11.325 <sup>a,b</sup>
	Expected Count	240.7	240.7	240.7	722.0	
Fair Posture	Count	270	286	261	817	
	Expected Count	272.3	272.3	272.3	817.0	
Good Posture	Count	273	266	322	861	
	Expected Count	287.0	287.0	287.0	861.0	

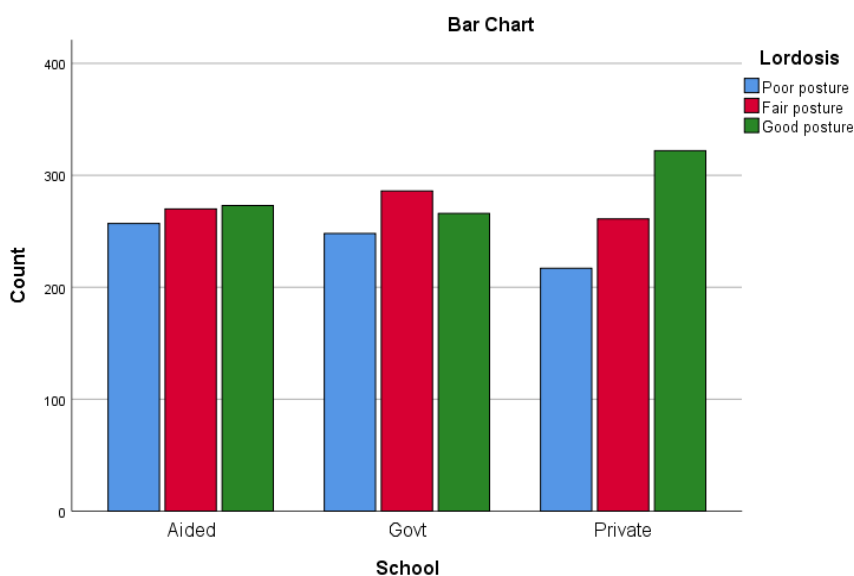
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 240.67

b. Asymptotic Significance (2-sided) (df b, 1) = 0.023

The table 74 related to chi-square analysis done on Lordosis among different types of schools irrespective of age and gender do reveals a chi-square value of 11.325 and the asymptotic significance (2 sided) value as 0.023, which is less than 0.05, the level of significance set for this study. This shows that, there is association between Lordosis and different types of schools irrespective of age and gender. The graphical representation on the count of Lordosis (such as poor posture, fair posture and good posture) among different gender is presented in figure 71.

**Figure 71**

*The graphical representation on the count of Lordosis among different types of schools*



**Table 75**

*Chi square analysis done on Round shoulder among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	257	219	235	711	10.881 <sup>a,b</sup>
	Expected Count	237.0	237.0	237.0	711	
Fair Posture	Count	283	276	251	810	
	Expected Count	270.0	270.0	270.0	810.0	
Good Posture	Count	260	305	314	879	
	Expected Count	293.0	293.0	293.0	879.0	

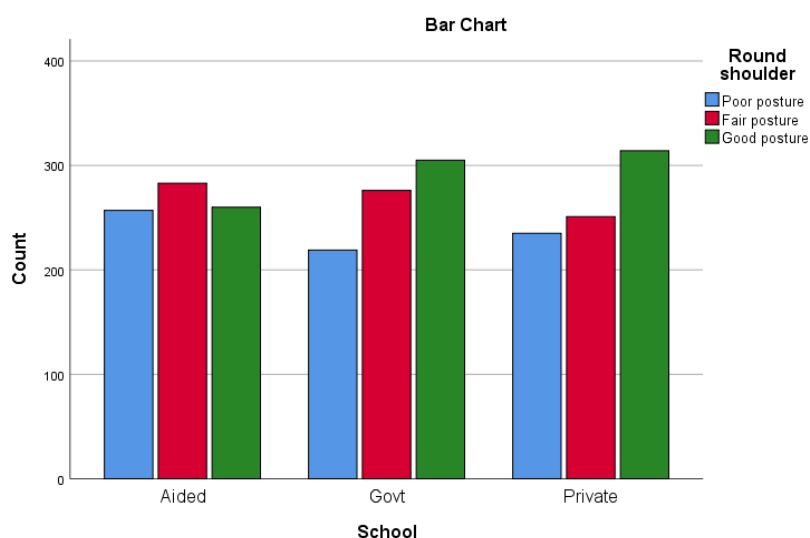
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 237.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.028

The table 75 related to chi-square analysis done on Round shoulder among different types of schools irrespective of age and gender do reveals a chi-square value of 10.881 and the asymptotic significance (2 sided) value as 0.028, which is less than 0.05, the level of significance set for this study. This shows that, there is association between Round shoulder and different types of schools irrespective of age and gender. The graphical representation on the count of Round shoulder (such as poor posture, fair posture and good posture) among different gender is presented in figure 72.

**Figure 72**

*The graphical representation on the count of Round shoulder among different types of schools*



**Table 76**

*Chi square analysis done on Bow leg among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	236	227	215	678	6.969 <sup>a,b</sup>
	Expected Count	226.00	226.0	226.0	678.0	
Fair Posture	Count	281	257	252	790	
	Expected Count	263.3	263.3	263.3	790.0	
Good Posture	Count	283	316	333	932	
	Expected Count	310.7	310.7	310.7	932.0	

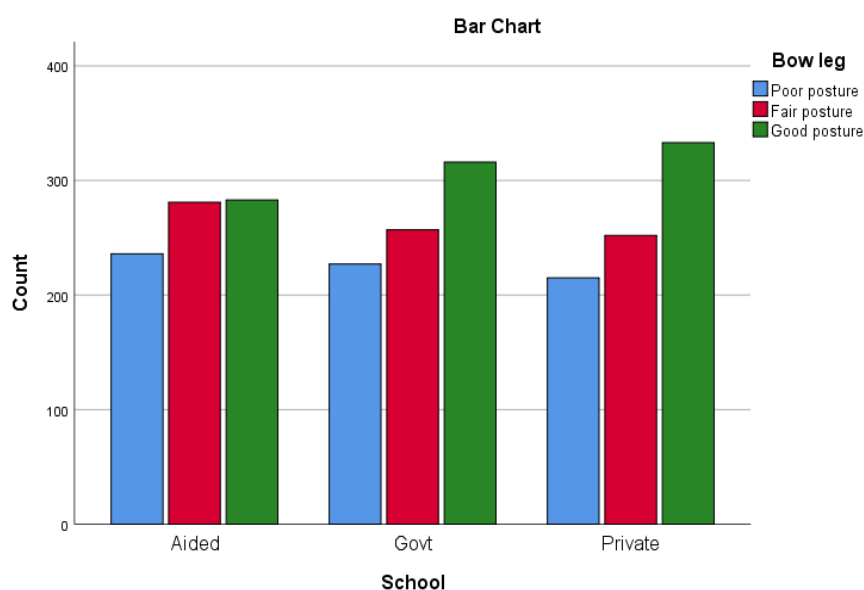
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 226.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.138

The table 76 related to chi-square analysis done on Bow leg among different types of schools irrespective of age and gender do reveals a chi-square value of 6.969 and the asymptotic significance (2 sided) value as 0.138, which is less than 0.05, the level of significance set for this study. This shows that, there is no association between Bow leg and different types of schools irrespective of age and gender. The graphical representation on the count of Bow leg (such as poor posture, fair posture and good posture) among different gender is presented in figure 73.

**Figure 73**

*The graphical representation on the count of Bow leg among different types of schools*



**Table 77**

*Chi square analysis done on Knock knee among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	209	226	201	636	4.174 <sup>a,b</sup>
	Expected Count	212.0	212.0	212.0	636.0	
Fair Posture	Count	263	263	250	776	
	Expected Count	258.7	258.7	258.7	776.0	
Good Posture	Count	328	311	349	988	
	Expected Count	329.3	329.3	329.3	988.0	

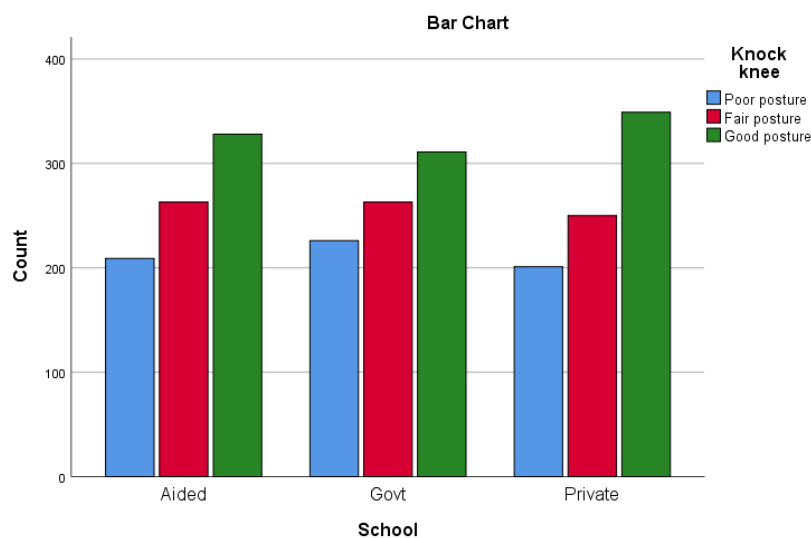
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 212.00

b. Asymptotic Significance (2-sided) (df b, 1) = 0.383

The table 77 related to chi-square analysis done on Knock knee among different types of schools irrespective of age and gender do reveals a chi-square value of 4.174 and the asymptotic significance (2 sided) value as 0.383, which is less than 0.05, the level of significance set for this study. This shows that, there is no association between Knock knee and different types of schools irrespective of age and gender. The graphical representation on the count of Knock knee (such as poor posture, fair posture and good posture) among different gender is presented in figure 74.

**Figure 74**

*The graphical representation on the count of Knock knee among different types of schools*



**Table 78**

*Chi square analysis done on Claw foot among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	214	219	201	634	2.365 <sup>a,b</sup>
	Expected Count	211.3	211.3	211.3	634.0	
Fair Posture	Count	260	261	251	772	
	Expected Count	257.3	257.3	257.3	772.0	
Good Posture	Count	326	320	348	994	
	Expected Count	331.3	331.3	331.3	994.0	

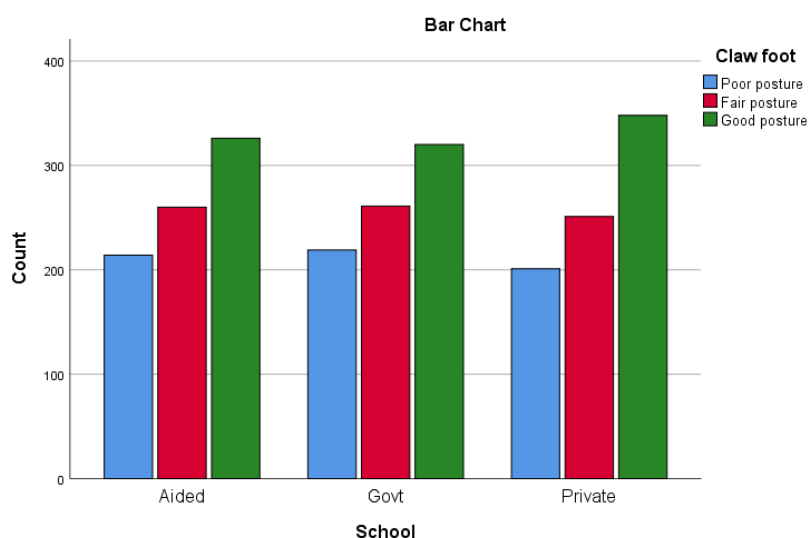
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 211.33

b. Asymptotic Significance (2-sided) (df b, 1) = 0.669

The table 78 related to chi-square analysis done on Claw foot among different types of schools irrespective of age and gender do reveals a chi-square value of 2.365 and the asymptotic significance (2 sided) value as 0.669, which is less than 0.05, the level of significance set for this study. This shows that, there is no association between Claw foot and different types of schools irrespective of age and gender. The graphical representation on the count of Claw foot (such as poor posture, fair posture and good posture) among different gender is presented in figure 75.

**Figure 75**

*The graphical representation on the count of Claw foot among different types of schools*





**Table 79**

*Chi square analysis done on Flat foot among different types of schools irrespective of age and gender*

		Aided	Govt.	Private	Total	$\chi^2$
Poor Posture	Count	217	219	202	638	1.734 <sup>a,b</sup>
	Expected Count	212.7	212.7	212.7	638.0	
Fair Posture	Count	261	258	255	774	
	Expected Count	258.0	258.0	258.0	774.0	
Good Posture	Count	322	323	343	988	
	Expected Count	329.3	329.3	329.3	988.0	

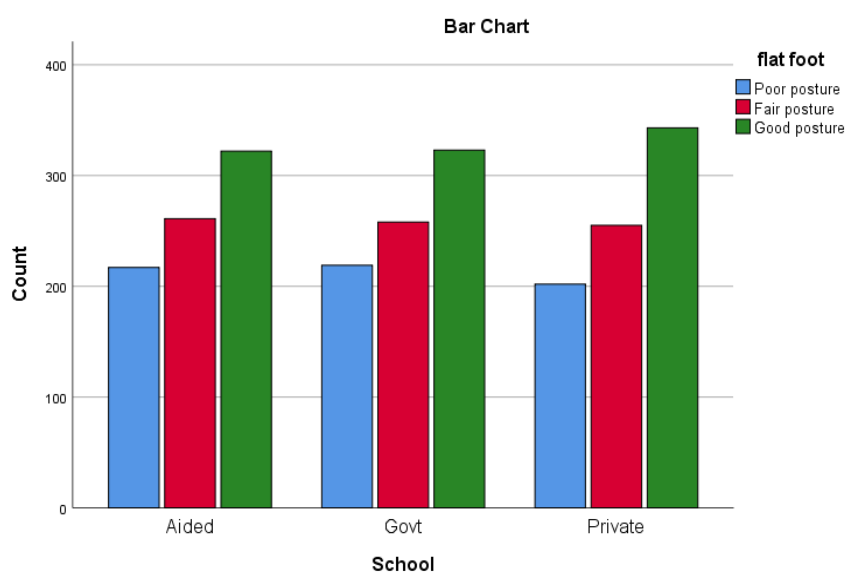
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 212.67

b. Asymptotic Significance (2-sided) (df b, 1) = 0.785

The table 79 related to chi-square analysis done on Flat foot among different types of schools irrespective of age and gender do reveals a chi-square value of 1.734 and the asymptotic significance (2 sided) value as 0.785, which is less than 0.05, the level of significance set for this study. This shows that, there is no association between Flat foot and different types of schools irrespective of age and gender. The graphical representation on the count of Flat foot (such as poor posture, fair posture and good posture) among different gender is presented in figure 76.

**Figure 76**

*The graphical representation on the count of Flat foot among different types of schools*



#### 4.5 Factor Analysis

Factor analysis describes a procedure to identify those linear combinations of variables (called as factors), which have large variances, ignoring the linear combination, which have small variances, for which the principal component method was selected.

Scores on all the thirteen Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 1, Explosive power 2 and Reaction time of the ten groups namely Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys, Under 17 year girls, Boys as a single group and Girls as a single group were subjected to correlation analysis. Correlation analysis was done for the ten groups were then used in the principal component analysis which are presented in table 80, 84, 89, 93, 97, 101, 105, 110, 114 & 119 respectively.

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unloaded factors obtained were then rotated by varimax method to find the final solution. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. The principal component analysis (Rotated factor loadings) done on Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys, Under 17 year girls, Boys as a single group and Girls as a single group are presented in table 81, 85, 90, 94, 98, 102, 106, 111, 115 & 120 respectively. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criteria each of the extracted prominent factors obtained from the selected groups were interpreted and given names.

**Table 80**

*Principal component analysis done on Physical fitness variables of Under 14 year boys (Unrotated factor loadings)*

	Component	
	Factor 1	Factor 2
Eigen value	8.122	2.531
Total Variance. Exp	62.477	19.466
Cum. Variance. Exp	62.477	81.942
1. Speed	0.514	0.673
2. Agility	0.588	0.339
3. Static balance	0.651	0.491
4. Dynamic balance	0.924	0.224
5. Movement time	0.834	0.477
6. Flexibility	0.894	0.349
7. Ankle flexibility	0.894	0.349
8. Abdominal strength	0.923	0.330
9. Coordination	0.378	0.839
10. Endurance	0.845	0.184
11. Explosive power 1	0.841	0.345
12. Explosive power 2	0.912	0.081
13. Reaction time	0.834	0.477

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The Unrotated factors obtained for Under 14 year boys were then rotated by varimax method to find the final solution and is presented in table 81. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 82 & 83.

**Table 81**

*Principal component analysis done on Physical fitness variables of Under 14 year boys (Rotated factor loadings)*

		<b>Component</b>	
		<b>Factor 1</b>	<b>Factor 2</b>
Eigen value		5.856	4.797
Total Variance. Exp		45.043	36.899
Cum. Variance. Exp		45.043	81.942
1.	Speed	0.032	0.846
2.	Agility	0.237	0.636
3.	Static balance	0.190	0.793
4.	Dynamic balance	0.855	0.415
5.	Movement time	0.339	0.899
6.	Flexibility	0.911	0.300
7.	Ankle flexibility	0.911	0.300
8.	Abdominal strength	0.921	0.333
9.	Coordination	0.826	0.406
10.	Endurance	0.535	0.680
11.	Explosive power 1	0.868	0.270
12.	Explosive power 2	0.755	0.518
13.	Reaction time	0.339	0.899

**Table 82**

*Factor one on Physical fitness variables of Under 14 year boys after rotated factor loadings (Varimax solution)*

<b>Item No.</b>	<b>Name of the variable</b>	<b>Factor loadings</b>
4.	Dynamic balance	0.855
6.	Flexibility	0.911
7.	Ankle flexibility	0.911
8.	Abdominal strength	0.921
9.	Coordination	0.826
11.	Explosive power 1	0.868
12.	Explosive power 2	0.755
Component one	% of variance – 45.043%	Eigen value – 5.856

Factor 1 on Physical fitness variables of Under 14 year boys (rotated factor loadings) in Table 82 was characterized by seven variables of the selected thirteen variables namely Dynamic balance, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Explosive power 1 and Explosive power 2. Since the Abdominal strength and the Flexibility variables such as Flexibility and Ankle flexibility are the heavily loaded items, this factor can be called as the Abstro-Flexibility factor. This factor accounted for 45.043% of the total common factor accounted by all the two factors.

**Table 83**

*Factor two on Physical fitness variables of Under 14 year boys after rotated factor loadings (Varimax solution)*

Item No.	Name of the variable	Factor loadings
1	Speed	0.846
2	Agility	0.636
3	Static balance	0.793
5	Movement time	0.899
10	Endurance	0.680
13	Reaction time	0.899
Component one	% of variance – 36.899%	Eigen value – 4.797

Factor 2 on Physical fitness variables of Under 14 year boys (rotated factor loadings) in Table 83 was characterized by six variables of the selected thirteen variables namely Speed, Agility, Static balance, Movement time, Endurance and Reaction time. Since the Movement time and the Reaction time are the heavily loaded items, this factor can be called as the Reaction time factor. This factor accounted for 36.899% of the total common factor accounted by all the two factors.

**Table 84**

*Principal component analysis done on Physical fitness variables of Under 14 year girls (Unrotated factor loadings)*

	Component		
	1	2	3
Eigen value	8.620	1.518	1.142
Total Variance. Exp	66.311	11.676	8.783
Cum. Variance. Exp	66.311	77.986	86.769
1. Speed	0.043	0.094	0.902
2. Agility	0.740	0.168	0.265
3. Static balance	0.586	0.562	0.018
4. Dynamic balance	0.979	0.024	0.063
5. Movement time	0.927	0.118	0.164
6. Flexibility	0.962	0.020	0.003
7. Ankle flexibility	0.962	0.020	0.003
8. Abdominal strength	0.967	0.020	0.115
9. Coordination	0.037	0.852	0.298
10. Endurance	0.654	0.638	0.271
11. Explosive power 1	0.945	0.025	0.126
12. Explosive power 2	0.969	0.042	0.089
13. Reaction time	0.927	0.118	0.164

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The Unrotated factors obtained for Under 14 year girls were then rotated by varimax method to find the final solution and is presented in table 85. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion three prominent factors were extracted which were interpreted and given names and are presented in table 86, 87 and 88.

**Table 85**

*Principal component analysis done on Physical fitness variables of Under 14 year girls (Rotated factor loadings)*

	Component		
	1	2	3
Eigen value	8.616	1.512	1.152
Total Variance. Exp	66.274	11.634	8.862
Cum. Variance. Exp	66.274	77.908	86.769
1. Speed	0.042	0.057	0.905
2. Agility	0.735	0.228	0.233
3. Static balance	0.601	0.536	0.110
4. Dynamic balance	0.978	0.039	0.067
5. Movement time	0.929	0.065	0.181
6. Flexibility	0.961	0.045	0.007
7. Ankle flexibility	0.961	0.045	0.007
8. Abdominal strength	0.968	0.014	0.111
9. Coordination	0.014	0.891	0.153
10. Endurance	0.638	0.599	0.373
11. Explosive power 1	0.946	0.021	0.121
12. Explosive power 2	0.970	0.031	0.081
13. Reaction time	0.929	0.065	0.181

**Table 86**

*Factor one on Physical fitness variables of Under 14 year girls after rotated factor loadings (Varimax solution)*

Item No.	Name of the variable	Factor loadings
2	Agility	0.735
3	Static balance	0.601
4	Dynamic balance	0.978
5	Movement time	0.929
6	Flexibility	0.961
7	Ankle flexibility	0.961
8	Abdominal strength	0.968
10	Endurance	0.638
11	Explosive power 1	0.946
12	Explosive power 2	0.970
13	Reaction time	0.929
Component one	% of variance – 66.274%	Eigen value – 8.616

Factor 1 on Physical fitness variables of Under 14 year girls (rotated factor loadings) in Table 86 was characterized by eleven variables of the selected thirteen variables namely Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time. Since the Dynamic balance and the Explosive Power 2 are the heavily loaded items, this factor can be called as the Balanco-Power factor. This factor accounted for 66.274% of the total common factor accounted by all the three factors.



**Table 87**

*Factor two on Physical fitness variables of Under 14 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
9	Coordination	0.891
Component two	% of variance – 11.676%	Eigen value – 1.518

Factor 2 on Physical fitness variables of Under 14 year girls (rotated factor loadings) in Table 87 was characterized by a single variable Coordination from among the selected thirteen variables. Since, Coordination is the heavily loaded item, this factor can be called as the Coordination factor. This factor accounted for 11.634% of the total common factor accounted by all the three factors.

**Table 88**

*Factor three on Physical fitness variables of Under 14 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.905
Component one	% of variance – 8.862%	Eigen value – 1.152

Factor 3 on Physical fitness variables of Under 14 year girls (rotated factor loadings) in Table 88 was characterized by a single variable Speed from among the selected thirteen variables. Since, Speed is the heavily loaded item, this factor can be called as the Speed factor. This factor accounted for 8.862% of the total common factor accounted by all the three factors.

**Table 89**

*Principal component analysis done on Physical fitness variables of Under 15 year boys (Unrotated factor loadings)*

		Component	
		1	2
Eigen value		9.416	1.457
Total Variance. Exp		72.430	11.208
Cum. Variance. Exp		72.430	83.638
1.	Speed	0.689	0.438
2.	Agility	0.782	0.544
3.	Static balance	0.859	0.404
4.	Dynamic balance	0.250	0.349
5.	Movement time	0.983	0.009
6.	Flexibility	0.983	0.023
7.	Ankle flexibility	0.983	0.023
8.	Abdominal strength	0.964	0.018
9.	Coordination	0.687	0.511
10.	Endurance	0.811	0.485
11.	Explosive power 1	0.965	0.065
12.	Explosive power 2	0.819	0.429
13.	Reaction time	0.983	0.009

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The Unrotated factors obtained for Under 15 year boys were then rotated by varimax method to find the final solution and is presented in table 90. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 91 and 92.

**Table 90**

*Principal component analysis done on Physical fitness variables of Under 15 year boys (Rotated factor loadings)*

	Component	
	1	2
Eigen value	6.5000	4.373
Total Variance. Exp	50.001	33.637
Cum. Variance. Exp	50.001	83.638
1. Speed	0.813	0.069
2. Agility	0.952	0.041
3. Static balance	0.928	0.199
4. Dynamic balance	0.012	0.429
5. Movement time	0.777	0.602
6. Flexibility	0.797	0.576
7. Ankle flexibility	0.797	0.576
8. Abdominal strength	0.778	0.569
9. Coordination	0.238	0.823
10. Endurance	0.352	0.877
11. Explosive power 1	0.808	0.532
12. Explosive power 2	0.393	0.837
13. Reaction time	0.777	0.602

**Table 91**

*Factor one on Physical fitness variables of Under 15 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.813
2	Agility	0.952
3	Static balance	0.928
5	Movement time	0.777
6	Flexibility	0.797
7	Ankle flexibility	0.797
8	Abdominal strength	0.778
11	Explosive power 1	0.808
13	Reaction time	0.777
Component one		% of variance – 50.001% Eigen value – 6.500

Factor 1 on Physical fitness variables of Under 15 year boys (rotated factor loadings) in Table 91 was characterized by nine variables of the selected thirteen variables namely Speed, Agility, Static balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive power 1 and Reaction time. Since, Agility is the heavily loaded items, this factor can be called as the Agile factor. This factor accounted for 50.01% of the total common factor accounted by all the two factors.

**Table 92**

*Factor Two on Physical fitness variables of Under 15 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor Loadings
5	Movement time	0.602
9	Coordination	0.823
10	Endurance	0.877
12	Explosive power 2	0.837
Component one		% of variance – 33.637% Eigen value – 4.373

Factor 2 on Physical fitness variables of Under 15 year boys (rotated factor loadings) in Table 92 was characterized by four variables of the selected thirteen variables namely Movement time, Coordination, Endurance and Explosive power 2. Since, Endurance is the heavily loaded item, this factor can be called as the Endurance factor. This factor account for 33.637% of the total common factor accounted by all the two factors.

**Table 93**

*Principal component analysis done on Physical fitness variables of Under 15 year girls (Unrotated factor loadings)*

	Component	
	1	2
Eigen value	8.620	1.518
Total Variance. Exp	66.311	11.676
Cum. Variance. Exp	66.311	77.986
1 Speed	0.876	0.213
2 Agility	0.817	0.473
3 Static balance	0.301	0.827
4 Dynamic balance	0.959	0.032
5 Movement time	0.972	0.099
6 Flexibility	0.974	0.068
7 Ankle flexibility	0.974	0.068
8 Abdominal strength	0.985	0.017
9 Coordination	0.949	0.133
10 Endurance	0.915	0.235
11 Explosive power 1	0.971	0.059
12 Explosive power 2	0.471	0.543
13 Reaction time	0.972	0.099

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The

unrotated factors obtained for Under 15 year girls were then rotated by varimax method to find the final solution and is presented in table 94. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 95 and 96.

**Table 94**

*Principal component analysis done on Physical fitness variables of Under 15 year girls (Rotated factor loadings)*

	Component	
	1	2
Eigen value	8.616	1.512
Total Variance. Exp	66.274	11.634
Cum. Variance. Exp	66.274	77.908
1 Speed	0.900	0.031
2 Agility	0.704	0.528
3 Static balance	0.128	0.871
4 Dynamic balance	0.933	0.225
5 Movement time	0.972	0.099
6 Flexibility	0.940	0.263
7 Ankle flexibility	0.940	0.263
8 Abdominal strength	0.968	0.182
9 Coordination	0.902	0.322
10 Endurance	0.944	0.045
11 Explosive power 1	0.963	0.138
12 Explosive power 2	0.571	0.437
13 Reaction time	0.972	0.099

**Table 95**

*Factor one on Physical fitness variables of Under 15 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.900
2	Agility	0.704
4	Dynamic balance	0.933
5	Movement time	0.972
6	Flexibility	0.940
7	Ankle flexibility	0.940
8	Abdominal strength	0.968
9	Coordination	0.902
10	Endurance	0.944
11	Explosive power 1	0.963
13	Reaction time	0.972
Component one		% of variance – 66.274% Eigen value – 8.616

Factor 1 on Physical fitness variables of Under 15 year girls (rotated factor loadings) in Table 95 was characterized by eleven variables of the selected thirteen variables namely Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 1 and Reaction time. Since, the Movement time and the Abdominal strength variables are the heavily loaded items, this factor can be called as the Movement-Abstro factor. This factor account for 66.274% of the total common factor accounted by all the two factors.

**Table 96**

*Factor Two on Physical fitness variables of Under 15 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
3	Static balance	0.871
Component one		% of variance – 11.634% Eigen value – 1.512

Factor 2 on Physical fitness variables of Under 15 year girls (rotated factor loadings) in Table 96 was characterized by a single variable Static balance of the selected thirteen variables. Since, Static balance is the heavily loaded item, this factor can be called as the Static balance factor. This factor accounted for 11.634% of the total common factor accounted by all the two factors.

**Table 97**

*Principal component analysis done on Physical fitness variables of Under 16 year boys (Unrotated factor loadings)*

	Component	
	1	2
Eigen value	9.177	2.006
Total Variance. Exp	70.592	15.429
Cum. Variance. Exp	70.592	86.021
1 Speed	0.283	0.838
2 Agility	0.558	0.645
3 Static balance	0.909	0.054
4 Dynamic balance	0.965	0.175
5 Movement time	0.929	0.137
6 Flexibility	0.968	0.074
7 Ankle flexibility	0.968	0.074
8 Abdominal strength	0.966	0.148
9 Coordination	0.865	0.374
10 Endurance	0.879	0.043
11 Explosive power 1	0.522	0.745
12 Explosive power 2	0.836	0.295
13 Reaction time	0.929	0.137

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for Under 16 year boys were then rotated by varimax method to find the final solution and is presented in table 98. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for



discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 99 & 100.

**Table 98**

*Principal component analysis done on Physical fitness variables of Under 16 year boys (Rotated factor loadings)*

		Component	
		1	2
Eigen value		8.585	2.597
Total Variance. Exp		66.040	19.981
Cum. Variance. Exp		66.040	86.021
1	Speed	0.030	0.884
2	Agility	0.720	0.457
3	Static balance	0.856	0.313
4	Dynamic balance	0.975	0.109
5	Movement time	0.851	0.398
6	Flexibility	0.948	0.207
7	Ankle flexibility	0.948	0.207
8	Abdominal strength	0.968	0.136
9	Coordination	0.936	0.110
10	Endurance	0.855	0.212
11	Explosive power 1	0.286	0.863
12	Explosive power 2	0.716	0.523
13	Reaction time	0.851	0.398

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for Under 16 year boys were then rotated by varimax method to find the final solution and is presented in table 99. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 100 & 101.

**Table 99**

*Factor one on Physical fitness variables of Under 16 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
2	Agility	0.720
3	Static balance	0.856
4	Dynamic balance	0.975
5	Movement time	0.851
6	Flexibility	0.948
7	Ankle flexibility	0.948
8	Abdominal strength	0.968
9	Coordination	0.936
10	Endurance	0.855
12	Explosive power 2	0.716
13	Reaction time	0.851
Component one	% of variance – 66.040%	Eigen value – 8.585

Factor 1 on Physical fitness variables of Under 16 year boys (rotated factor loadings) in Table 99 was characterized by eleven variables of the selected thirteen variables namely Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 2 and Reaction time. Since, the Dynamic balance and the Abdominal strength variables are the heavily loaded items, this factor can be called as the Dynamic-Abstro factor. This factor accounted for 66.040% of the total common factor accounted by all the two factors.

**Table 100**

*Factor two on Physical fitness variables of Under 16 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.884
11	Explosive power 1	0.863
Component two	% of variance – 19.981%	Eigen value – 2.597

Factor 2 on Physical fitness variables of Under 16 year boys (rotated factor loadings) in Table 100 was characterized by two variables of the selected thirteen variables namely Speed and Explosive power 1. Since, both Speed and Explosive power 1 are heavily loaded items, this factor can be called as the Speedo-Power factor. This factor accounted for 19.981% of the total common factor accounted by all the two factors.

**Table 101**

*Principal component analysis done on Physical fitness variables of Under 16 year girls (Unrotated factor loadings)*

	Component	
	1	2
Eigen value	10.385	1.510
Total Variance. Exp	79.882	11.617
Cum. Variance. Exp	79.882	91.498
1 Speed	0.949	0.139
2 Agility	0.664	0.602
3 Static balance	0.876	0.202
4 Dynamic balance	0.972	0.081
5 Movement time	0.978	0.076
6 Flexibility	0.988	0.035
7 Ankle flexibility	0.988	0.035
8 Abdominal strength	0.984	0.084
9 Coordination	0.531	0.752
10 Endurance	0.956	0.088
11 Explosive power 1	0.906	0.203
12 Explosive power 2	0.694	0.667
13 Reaction time	0.978	0.076

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The

unrotated factors obtained for Under 16 year girls were then rotated by varimax method to find the final solution and is presented in table 102. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 103 and 104.

**Table 102**

*Principal component analysis done on Physical fitness variables of Under 16 year girls (Rotated factor loadings)*

		Component	
		1	2
Eigen value		8.529	3.365
Total Variance. Exp		65.611	25.888
Cum. Variance. Exp		65.611	91.498
1	Speed	0.907	0.311
2	Agility	0.865	0.232
3	Static balance	0.687	0.581
4	Dynamic balance	0.902	0.372
5	Movement time	0.905	0.380
6	Flexibility	0.862	0.483
7	Ankle flexibility	0.862	0.483
8	Abdominal strength	0.914	0.375
9	Coordination	0.129	0.912
10	Endurance	0.890	0.359
11	Explosive power 1	0.899	0.233
12	Explosive power 2	0.312	0.910
13	Reaction time	0.905	0.380

**Table 103**

*Factor one on Physical fitness variables of Under 16 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.907
2	Agility	0.865
3	Static balance	0.687
4	Dynamic balance	0.902
5	Movement time	0.905
6	Flexibility	0.862
7	Ankle flexibility	0.862
8	Abdominal strength	0.914
10	Endurance	0.890
11	Explosive power 1	0.899
13	Reaction time	0.905
Component one		% of variance – 65.611% Eigen value – 8.529

Factor 1 on Physical fitness variables of Under 16 year girls (rotated factor loadings) in Table 103 was characterized by eleven variables of the selected thirteen variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1 and Reaction time. Since, the Abdominal strength is the heavily loaded item, this factor can be called as the Abstro factor. This factor accounted for 65.611% of the total common factor accounted by all the two factors.

**Table 104**

*Factor two on Physical fitness variables of Under 16 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
9	Coordination	0.912
12	Explosive power 2	0.910
Component two		% of variance – 25.888% Eigen value – 3.365

Factor 2 on Physical fitness variables of Under 16 year girls (rotated factor loadings) in Table 104 was characterized by two variables of the selected thirteen variables namely Coordination and Explosive power 2. Since, Coordination and the Explosive power are the heavily loaded items, this factor can be called as the Coordination-Power factor. This factor accounted for 25.888% of the total common factor accounted by all the two factors.

**Table 105**

*Principal component analysis done on Physical fitness variables of Under 17 year boys (Unrotated factor loadings)*

		Component		
		1	2	3
Eigen value		9.181	1.467	1.151
Total Variance. Exp		70.621	11.284	8.856
Cum. Variance. Exp		70.621	81.905	90.761
1	Speed	0.981	0.060	0.037
2	Agility	0.834	0.167	0.202
3	Static balance	0.248	0.872	0.174
4	Dynamic balance	0.984	0.018	0.005
5	Movement time	0.958	0.061	0.071
6	Flexibility	0.975	0.045	0.070
7	Ankle flexibility	0.975	0.045	0.070
8	Abdominal strength	0.992	0.007	0.029
9	Coordination	0.394	0.704	0.298
10	Endurance	0.035	0.032	0.965
11	Explosive power 1	0.963	0.020	0.110
12	Explosive power 2	0.829	0.408	0.160
13	Reaction time	0.958	0.061	0.071

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for Under 17 year boys were then rotated by varimax method to find the final solution and is presented in table 106. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion three prominent factors were extracted which were interpreted and given names and are presented in table 107, 108 and 109.

**Table 106**

*Principal component analysis done on Physical fitness variables of Under 17 year boys (Rotated factor loadings)*

		Component		
		1	2	3
Eigen value		9.152	1.492	1.155
Total Variance. Exp		70.400	11.477	8.883
Cum. Variance. Exp		70.400	81.878	90.761
1	Speed	0.982	0.004	0.057
2	Agility	0.838	0.122	0.217
3	Static balance	0.295	0.859	0.168
4	Dynamic balance	0.982	0.074	0.016
5	Movement time	0.961	0.005	0.051
6	Flexibility	0.977	0.011	0.050
7	Ankle flexibility	0.977	0.011	0.050
8	Abdominal strength	0.990	0.064	0.008
9	Coordination	0.347	0.721	0.315
10	Endurance	0.056	0.017	0.965
11	Explosive power 1	0.960	0.033	0.130
12	Explosive power 2	0.807	0.457	0.138
13	Reaction time	0.961	0.005	0.051

**Table 107**

*Factor one on Physical fitness variables of Under 17 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the Variable	Factor loadings
1	Speed	0.982
2	Agility	0.838
4	Dynamic balance	0.982
5	Movement time	0.961
6	Flexibility	0.977
7	Ankle flexibility	0.977
8	Abdominal strength	0.990
11	Explosive power 1	0.960
12	Explosive power 2	0.807
13	Reaction time	0.961
Component one	% of variance – 70.400%	Eigen value – 9.152

Factor 1 on Physical fitness variables of Under 17 year boys (rotated factor loadings) in Table 107 was characterized by ten variables of the selected thirteen variables namely Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive power 1, Explosive power 2 and Reaction time. Since, the Abdominal strength is the heavily loaded items, this factor can be called as the Abstro17B factor. This factor accounted for 70.400% of the total common factor accounted by all the three factors.

**Table 108**

*Factor two on Physical fitness variables of Under 17 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
3	Static balance	0.859
9	Coordination	0.721
Component two	% of variance – 11.477%	Eigen value – 1.492



Factor 2 on Physical fitness variables of Under 14 year girls (rotated factor loadings) in Table 108 was characterized by two variables Static balance and Coordination from among the selected thirteen variables. Since, Static balance is the heavily loaded item, this factor can be called as the Static balance 17B factor. This factor accounted for 11.477% of the total common factor accounted by all the three factors.

**Table 109**

*Factor three on Physical fitness variables of Under 17 year boys after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
10	Endurance	0.965
Component three	% of variance – 8.883%	Eigen value – 1.155

Factor 3 on Physical fitness variables of Under 14 year girls (rotated factor loadings) in Table 109 was characterized by a single variable Endurance from among the selected thirteen variables. Since, Endurance is the heavily loaded item, this factor can be called as the Endurance 17B factor. This factor accounted for 8.883% of the total common factor accounted by all the three factors.

**Table 110**

*Principal component analysis done on Physical fitness variables of Under 17 year girls (Unrotated factor loadings)*

		Component	
		1	2
Eigen value		10.110	1.494
Total Variance. Exp		77.770	11.492
Cum. Variance. Exp		77.770	89.262
1	Speed	0.850	0.405
2	Agility	0.818	0.435
3	Static balance	0.960	0.156
4	Dynamic balance	0.972	0.017
5	Movement time	0.908	0.228
6	Flexibility	0.979	0.006
7	Ankle flexibility	0.979	0.006
8	Abdominal strength	0.981	0.008
9	Coordination	0.014	0.854
10	Endurance	0.958	0.059
11	Explosive power 1	0.976	0.041
12	Explosive power 2	0.673	0.528
13	Reaction time	0.908	0.228

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for Under 17 year girls were then rotated by varimax method to find the final solution and is presented in table 111. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion two prominent factors were extracted which were interpreted and given names and are presented in table 112 and 113.

**Table 111**

*Principal component analysis done on Physical fitness variables of Under 17 year girls (Rotated factor loadings)*

		Component	
		1	2
Eigen value		10.10	1.504
Total Variance. Exp		77.689	11.573
Cum. Variance. Exp		77.689	89.262
1	Speed	0.863	0.375
2	Agility	0.833	0.407
3	Static balance	0.965	0.122
4	Dynamic balance	0.971	0.051
5	Movement time	0.900	0.259
6	Flexibility	0.978	0.028
7	Ankle flexibility	0.978	0.028
8	Abdominal strength	0.981	0.026
9	Coordination	0.044	0.853
10	Endurance	0.956	0.092
11	Explosive power 1	0.974	0.075
12	Explosive power 2	0.654	0.551
13	Reaction time	0.900	0.259

**Table 112**

*Factor one on Physical fitness variables of Under 17 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.863
2	Agility	0.833
3	Static balance	0.965
4	Dynamic balance	0.971
5	Movement time	0.900
6	Flexibility	0.978
7	Ankle flexibility	0.978
8	Abdominal strength	0.981
10	Endurance	0.956
11	Explosive power 1	0.974
12	Explosive power 2	0.654
13	Reaction time	0.900
Component one	% of variance – 77.689%	Eigen value – 10.10

Factor 1 on Physical fitness variables of Under 17 year girls (rotated factor loadings) in Table 112 was characterized by twelve variables of the selected thirteen variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time. Since, the Abdominal strength is the heavily loaded items, this factor can be called as the Abstro17G factor. This factor accounted for 77.689% of the total common factor accounted by all the two factors.

**Table 113**

*Factor two on Physical fitness variables of Under 17 year girls after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
9	Coordination	0.853
Component one	% of variance – 11.573%	Eigen value – 1.504

Factor 2 on Physical fitness variables of Under 17 year girls (rotated factor loadings) in Table 113 was characterized by a single variable of the selected thirteen variables namely Coordination. Since, Coordination is the heavily loaded item, this factor can be called as the Coordination 17G factor. This factor accounted for 11.573% of the total common factor accounted by all the two factors.

**Table 114**

*Principal component analysis done on Physical fitness variables of boys irrespective of age (Unrotated factor loadings)*

		Component		
		1	2	3
Eigen value		7.646	1.685	1.376
Total Variance. Exp		58.816	12.959	10.585
Cum. Variance. Exp		58.816	71.775	82.359
1	Speed	0.686	0.249	0.216
2	Agility	0.618	0.464	0.025
3	Static balance	0.916	0.184	0.159
4	Dynamic balance	0.874	0.384	0.175
5	Movement time	0.962	0.029	0.192
6	Flexibility	0.924	0.311	0.074
7	Ankle flexibility	0.924	0.311	0.074
8	Abdominal strength	0.852	0.441	0.173
9	Coordination	0.398	0.118	0.700
10	Endurance	0.368	0.696	0.033
11	Explosive power 1	0.238	0.395	0.757
12	Explosive power 2	0.745	0.427	0.307
13	Reaction time	0.962	0.029	0.192

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for boys irrespective of age were then rotated by varimax

method to find the final solution and is presented in table 115. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion three prominent factors were extracted which were interpreted and given names and are presented in table 116 and 117.

**Table 115**

*Principal component analysis done on Physical fitness variables of boys irrespective of age (Rotated factor loadings)*

		Component		
		1	2	3
Eigen value		7.646	1.685	1.376
Total Variance. Exp		58.816	12.959	10.585
Cum. Variance. Exp		58.816	71.775	82.359
1	Speed	0.394	0.652	0.008
2	Agility	0.223	0.705	0.226
3	Static balance	0.520	0.713	0.062
4	Dynamic balance	0.941	0.150	0.186
5	Movement time	0.781	0.594	0.030
6	Flexibility	0.932	0.268	0.123
7	Ankle flexibility	0.932	0.268	0.123
8	Abdominal strength	0.957	0.096	0.162
9	Coordination	0.292	0.065	0.757
10	Endurance	0.111	0.714	0.313
11	Explosive power 1	0.003	0.161	0.871
12	Explosive power 2	0.330	0.849	0.027
13	Reaction time	0.781	0.594	0.030

**Table 116**

*Factor one on Physical fitness variables of boys irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
4	Dynamic balance	0.941
5	Movement time	0.781
6	Flexibility	0.932
7	Ankle flexibility	0.932
8	Abdominal strength	0.957
13	Reaction time	0.781
Component one	% of variance – 58.816%	Eigen value – 7.646

Factor 1 on Physical fitness variables of boys irrespective of age (rotated factor loadings) in Table 116 was characterized by seven variables of the selected thirteen variables namely Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength and Reaction time. Since the Abdominal strength is the heavily loaded item, this factor can be called as the Abstro boys factor. This factor accounted for 58.816% of the total common factor accounted by all the three factors.

**Table 117**

*Factor two on Physical fitness variables of boys irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
1	Speed	0.652
3	Static balance	0.713
2	Agility	0.705
10	Endurance	0.714
12	Explosive power 2	0.849
Component two	% of variance – 12.959%	Eigen value – 1.685

Factor 2 on Physical fitness variables of boys irrespective of age (rotated factor loadings) in Table 117 was characterized by five variables namely Speed, Agility, Static balance, Endurance and Explosive power 2 from among the selected thirteen variables. Since, Explosive power 2 is the heavily loaded item, this factor can be called as the Power boys factor. This factor accounted for 12.959% of the total common factor accounted by all the three factors.

**Table 118**

*Factor three on Physical fitness variables of boys irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
9	Coordination	0.757
11	Explosive power 1	0.871
Component three	% of variance – 10.585%	Eigen value – 1.376

Factor 3 on Physical fitness variables of Boys irrespective of age and type of school (rotated factor loadings) in Table 118 was characterized by two variables namely Coordination and Explosive power 1 from among the selected thirteen variables. Since, Explosive power 1 is the heavily loaded item, this factor can be called as the Explosive power factor. This factor accounted for 10.585% of the total common factor accounted by all the three factors.



**Table 119**

*Principal component analysis done on Physical fitness variables of girls irrespective of age (Unrotated factor loadings)*

		Component		
		1	2	3
Eigen value		6.094	2.201	1.288
Total Variance. Exp		46.877	16.927	9.911
Cum. Variance. Exp		46.877	63.804	73.715
1	Speed	0.030	0.457	0.176
2	Agility	0.246	0.699	0.300
3	Static balance	0.521	0.204	0.558
4	Dynamic balance	0.966	0.020	0.013
5	Movement time	0.964	0.036	0.021
6	Flexibility	0.926	0.329	0.115
7	Ankle flexibility	0.926	0.329	0.115
8	Abdominal strength	0.799	0.526	0.150
9	Coordination	0.036	0.392	0.727
10	Endurance	0.411	0.474	0.378
11	Explosive power 1	0.508	0.654	0.113
12	Explosive power 2	0.431	0.399	0.349
13	Reaction time	0.964	0.036	0.021

With the help of Kaiser's criteria suggested by Guttman, only those factors having latent roots greater than one were considered as common factors. The unrotated factors obtained for girls irrespective of age were then rotated by varimax method to find the final solution and is presented in table 120. Rotation of the factors is important in order to avoid the overlapping of variable in other factors. Items with loadings greater than or equal to  $\pm 0.60$  of varimax solution were selected for discussing each factor. Later, owing to this criterion three prominent factors were extracted which were interpreted and given names and are presented in table 121, 122 and 123.

**Table 120**

*Principal component analysis done on Physical fitness variables of girls irrespective of age (Rotated factor loadings)*

		Component		
		1	2	3
Eigen value		5.421	2.336	1.826
Total Variance. Exp		41.702	17.967	14.046
Cum. Variance. Exp		41.702	14.046	73.715
1	Speed	0.170	0.155	0.433
2	Agility	0.086	0.736	0.301
3	Static balance	0.308	0.706	0.180
4	Dynamic balance	0.887	0.362	0.124
5	Movement time	0.863	0.402	0.157
6	Flexibility	0.987	0.066	0.002
7	Ankle flexibility	0.987	0.066	0.002
8	Abdominal strength	0.951	0.129	0.131
9	Coordination	0.005	0.235	0.793
10	Endurance	0.260	0.195	0.656
11	Explosive power 1	0.238	0.525	0.605
12	Explosive power 2	0.187	0.651	0.090
13	Reaction time	0.863	0.402	0.157

**Table 121**

*Factor one on Physical fitness variables of girls irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
4	Dynamic balance	0.887
5	Movement time	0.863
6	Flexibility	0.987
7	Ankle flexibility	0.987
8	Abdominal strength	0.951
13	Reaction time	0.863
Component one		Eigen value – 5.421
% of variance – 41.702%		

Factor 1 on Physical fitness variables of girls irrespective of age (rotated factor loadings) in Table 121 was characterized by six variables of the selected thirteen variables namely Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength and Reaction time. Since, the Flexibility and the Ankle flexibility are the heavily loaded items, this factor can be called as the Flexibility factor. This factor accounted for 41.702% of the total common factor accounted by all the three factors.

**Table 122**

*Factor two on Physical fitness variables of girls irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
2	Agility	0.736
3	Static balance	0.706
12	Explosive power 2	0.651
Component two	% of variance – 17.967%	Eigen value – 2.336

Factor 2 on Physical fitness variables of girls irrespective of age (rotated factor loadings) in table 122 was characterized by three variables namely Agility, Static balance and Explosive power 2 from among the selected thirteen variables. Since, Agility is the heavily loaded item, this factor can be called as the G-Agile factor. This factor accounted for 17.967% of the total common factor accounted by all the three factors.

**Table 123**

*Factor three on Physical fitness variables of girls irrespective of age after rotated factor loadings (Varimax solution)*

SI No	Name of the variable	Factor loadings
9	Coordination	0.793
10	Endurance	0.656
11	Explosive power 1	0.605
Component three	% of variance – 14.046%	Eigen value – 1.826

Factor 3 on Physical fitness variables of girls irrespective of age (rotated factor loadings) in table 123 was characterized by three variables namely Coordination, Endurance and Explosive power 1 from among the selected thirteen variables. Since Coordination is the heavily loaded item, this factor can be called as the G-Coordination factor. This factor accounted for 14.046% of the total common factor accounted by all the three factors.

#### **4.6 Percentile Norms**

Percentile norms were constructed for various selected age and gender groups irrespective of the type of school such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls. The percentile norms were constructed only on those variables of the first factor only, which were found to be prominent items after factor analysis (rotated by varimax method). Items with loadings greater than or equal to  $\pm 0.80$  of varimax solution.

Accordingly, for the Under 14 year boys, Dynamic balance, Flexibility, Ankle flexibility, Abdominal strength, Coordination and Explosive Power 1 were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 14 year boys and is presented in Table 124.

**Table 124**

*Percentile norms constructed on prominent items of Physical fitness of Under 14 year boys irrespective of the type of school*

		DB	FLX	AF	AS	CRN	EXP1
N	Valid	300	300	300	300	300	300
	Missing	0	0	0	0	0	0
Percentiles	1	40.00	22.00	12.00	25.00	19.100	52.00
	2	40.00	22.00	12.00	25.00	19.100	52.00
	3	40.00	22.00	12.03	25.00	19.100	52.00
	4	40.00	22.00	13.00	26.00	19.100	52.00
	5	40.00	22.00	13.00	26.00	19.100	52.05
	6	40.00	22.06	13.00	26.06	19.100	53.00
	7	40.00	23.00	13.00	27.00	19.100	53.00
	8	40.00	23.00	14.00	27.00	19.100	53.00
	9	40.09	23.00	14.00	27.00	19.100	53.00
	10	41.00	23.00	14.00	27.00	19.100	53.00
	11	41.00	23.00	14.00	27.00	19.100	53.00
	12	41.00	23.00	14.00	27.00	19.100	53.00
	13	41.00	26.00	14.00	27.00	19.100	53.00
	14	41.00	26.00	14.00	28.00	19.100	53.00
	15	41.00	26.00	14.00	28.00	19.100	53.00
	16	41.00	26.00	14.00	28.00	19.100	53.00
	17	42.00	26.00	14.00	28.00	19.100	53.00
	18	42.00	26.00	14.00	28.00	19.100	53.00
	19	42.00	26.00	14.00	28.00	19.100	53.00
	20	42.00	26.00	14.00	28.00	19.100	54.00
	21	42.00	26.00	14.00	29.00	19.100	54.00
	22	42.00	27.00	14.00	29.00	19.100	54.00
	23	43.00	27.00	14.00	29.00	19.100	54.00
	24	43.00	27.00	14.00	29.00	19.100	54.00
	25	43.00	27.00	14.00	29.00	19.100	54.00
	26	43.00	27.00	14.00	29.00	19.100	54.00
	27	43.00	27.00	14.00	29.27	19.100	54.00
	28	43.00	27.00	14.00	30.00	19.156	54.00
	29	43.00	28.00	14.00	30.00	19.300	54.00
	30	43.00	28.00	14.00	30.00	19.300	54.00
	31	43.00	28.00	15.00	30.00	19.300	54.00
	32	43.00	28.00	15.00	30.00	19.300	54.00
	33	43.00	28.00	15.00	30.00	19.300	54.00

		DB	FLX	AF	AS	CRN	EXP1
N	Valid	300	300	300	300	300	300
	Missing	0	0	0	0	0	0
	34	43.00	28.00	15.00	31.00	19.300	54.00
	35	43.00	28.00	15.00	31.00	19.300	54.00
	36	44.00	28.00	15.00	31.00	19.300	54.00
	37	44.00	29.00	15.00	31.00	19.300	54.00
	38	44.00	29.00	15.00	31.00	19.600	55.00
	39	44.00	29.00	15.00	31.00	19.600	55.00
	40	44.00	29.00	15.00	31.00	19.600	55.00
	41	44.00	29.00	15.00	31.00	19.600	55.00
	42	44.00	29.00	15.00	32.00	19.600	55.00
	43	44.00	29.00	15.00	32.00	19.600	55.00
	44	44.00	29.00	15.00	32.00	19.600	55.00
	45	44.00	30.00	15.00	32.90	19.600	55.00
	46	44.46	30.00	15.00	34.00	20.000	55.00
	47	45.00	30.00	15.00	34.00	20.000	55.00
	48	45.00	30.00	15.00	34.00	20.000	55.00
	49	45.00	30.00	15.00	34.00	20.000	55.00
	50	45.00	30.00	15.00	34.00	20.000	55.00
	51	45.00	30.00	15.00	34.00	20.000	55.00
Percentiles	52	46.00	30.00	15.00	34.00	20.000	55.00
	53	46.00	30.00	15.00	34.53	20.000	55.00
	54	46.00	30.00	15.00	35.00	20.300	55.00
	55	46.00	30.55	16.00	35.00	20.300	55.00
	56	46.00	31.00	16.00	35.00	20.300	55.56
	57	46.00	31.00	16.00	35.00	20.300	56.00
	58	46.00	31.00	16.00	35.00	20.300	56.00
	59	46.00	31.00	16.00	35.00	20.300	56.00
	60	46.00	31.00	16.00	36.00	20.300	56.00
	61	47.00	31.00	16.00	36.00	20.300	56.00
	62	47.00	31.00	16.00	36.00	20.300	56.00
	63	47.00	32.00	16.00	36.00	20.300	56.00
	64	47.00	32.00	16.00	37.00	20.300	56.00
	65	47.00	32.00	16.00	37.00	20.300	56.00
	66	47.00	32.00	16.00	37.00	20.500	56.00
	67	47.00	32.00	16.00	37.00	20.500	56.00
	68	47.00	32.00	16.00	37.00	20.500	56.00
	69	47.00	32.00	16.00	40.00	20.500	56.00
	70	47.00	32.00	16.00	40.00	20.500	56.00
	71	47.00	32.00	16.00	40.00	20.500	56.00
	72	47.00	32.00	16.00	40.00	20.500	56.00

		DB	FLX	AF	AS	CRN	EXP1
N	Valid	300	300	300	300	300	300
	Missing	0	0	0	0	0	0
Percentiles	73	48.00	33.00	16.00	40.00	20.500	56.00
	74	48.00	33.00	16.00	40.00	20.500	56.00
	75	48.00	33.00	16.00	40.00	20.500	56.00
	76	48.00	33.00	16.00	40.00	20.880	56.00
	77	48.00	33.00	16.77	40.00	21.000	56.00
	78	48.00	33.00	17.00	41.00	21.000	56.00
	79	48.00	36.00	17.00	41.00	21.000	56.00
	80	49.00	36.00	17.00	41.00	21.000	56.00
	81	49.00	36.00	17.00	41.00	21.000	56.00
	82	49.00	36.00	17.00	41.00	21.000	56.00
	83	49.00	36.00	17.00	41.00	21.000	56.00
	84	49.00	36.00	17.00	41.00	21.000	56.00
	85	49.00	36.00	17.00	42.00	21.000	56.00
	86	49.00	36.00	17.00	42.00	21.000	56.00
	87	49.00	36.00	17.00	42.00	21.000	56.00
	88	49.00	36.00	17.00	42.00	21.880	56.00
	89	49.00	37.78	18.00	42.89	22.000	56.89
	90	49.00	38.00	18.00	43.00	22.000	57.00
	91	49.00	38.00	18.00	43.00	22.000	57.00
	92	49.00	38.00	18.00	43.00	22.000	57.00
93	49.00	38.00	18.00	43.00	22.000	57.00	
94	49.00	38.00	18.00	43.94	22.000	57.00	
95	50.00	38.00	18.00	44.00	22.000	57.00	
96	50.00	38.00	18.00	44.00	22.000	57.00	
97	50.00	39.00	18.00	45.94	22.000	57.00	
98	50.00	39.00	18.00	46.00	22.000	57.00	
99	50.00	39.00	18.00	46.00	22.000	57.00	

a. Age = Under-14, Gender = Boys

DB - Dynamic balance, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, CRN – Coordination, EXP1 - Explosive power 1

Besides, for the Under 14 year girls, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power 1, Explosive power 2 and Reaction time were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 14 year girls and is presented in Table 125.

**Table 125**

*Percentile norms constructed on prominent items of Physical fitness of Under 14 year girls irrespective of the type of school*

N		DB	MT	FLX	AF	AS	EXP1	EXP2	RT
	Valid	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0
Percentiles	1	30.00	36.00	20.00	14.00	15.00	44.00	111.00	36.00
	2	30.00	36.00	20.00	14.00	15.00	44.00	111.00	36.00
	3	30.00	36.00	20.00	14.00	15.00	44.03	111.00	36.00
	4	30.00	36.04	20.00	14.00	15.04	45.00	112.00	36.04
	5	30.00	37.00	20.00	14.00	16.00	45.00	112.00	37.00
	6	30.00	37.00	20.00	14.00	16.00	45.00	112.00	37.00
	7	30.00	37.00	20.00	14.00	16.00	45.00	112.00	37.00
	8	30.00	37.00	20.00	14.00	16.00	45.00	113.00	37.00
	9	30.00	37.00	20.00	14.00	16.09	45.00	113.00	37.00
	10	30.00	37.00	21.00	14.00	17.00	45.00	113.00	37.00
	11	30.00	37.00	21.00	14.00	17.00	45.00	114.00	37.00
	12	30.00	37.00	21.00	14.00	17.00	46.00	114.00	37.00
	13	31.00	37.00	21.00	14.00	17.00	46.00	114.00	37.00
	14	31.00	37.00	21.00	14.00	17.00	46.00	114.00	37.00
	15	31.00	37.00	21.00	15.00	17.00	46.00	114.00	37.00
	16	31.00	37.00	21.00	15.00	18.00	46.00	114.00	37.00
	17	31.00	37.00	21.00	15.00	18.00	46.00	114.00	37.00
	18	32.00	37.00	22.00	15.00	18.00	46.00	114.00	37.00
	19	32.00	37.00	22.00	15.00	18.00	46.00	114.00	37.00
	20	32.00	37.00	22.00	15.00	18.20	46.00	114.00	37.00
	21	32.00	37.00	22.00	15.00	19.00	46.00	114.00	37.00
	22	32.00	37.00	22.00	15.00	19.00	46.00	114.00	37.00
	23	32.00	38.00	22.00	15.00	19.00	46.00	115.00	38.00
	24	32.00	38.00	22.00	15.00	19.00	46.00	115.00	38.00
	25	32.00	38.00	22.00	15.00	19.25	46.00	115.00	38.00
	26	32.00	38.00	22.00	15.00	20.00	46.00	115.00	38.00
	27	32.00	38.00	22.00	15.00	20.00	46.00	115.00	38.00
	28	32.00	38.00	23.00	15.00	20.00	46.28	115.00	38.00
	29	32.00	38.00	23.00	15.00	20.00	47.00	115.00	38.00
	30	32.00	38.00	23.00	15.00	21.00	47.00	115.00	38.00
	31	32.00	38.00	23.00	15.00	21.00	47.00	115.00	38.00
	32	32.00	38.00	23.00	15.00	21.00	47.00	115.00	38.00
	33	32.00	38.00	23.00	15.00	21.00	47.00	115.00	38.00
	34	33.00	38.00	23.00	15.00	21.34	47.00	115.00	38.00
	35	33.00	38.00	23.00	15.00	22.00	47.00	115.00	38.00
	36	33.00	38.00	23.00	15.00	22.00	47.00	115.00	38.00
	37	33.00	38.00	23.00	15.00	22.00	47.00	115.00	38.00
	38	33.00	38.00	23.00	15.00	22.00	47.00	115.38	38.00



		DB	MT	FLX	AF	AS	EXP1	EXP2	RT
N	Valid	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0
Percentiles	39	33.00	39.00	23.00	15.00	22.39	47.00	116.00	39.00
	40	33.00	39.00	24.00	15.00	23.00	47.00	116.00	39.00
	41	33.00	39.00	24.00	15.00	23.00	47.00	116.00	39.00
	42	33.00	39.00	24.00	15.00	23.00	47.00	116.00	39.00
	43	33.00	39.00	24.00	15.00	23.43	47.00	116.00	39.00
	44	33.00	39.00	25.00	15.00	24.00	47.00	116.00	39.00
	45	33.00	39.00	25.00	15.00	24.00	47.00	116.00	39.00
	46	33.00	39.00	25.00	15.00	24.00	47.46	116.00	39.00
	47	33.00	40.00	25.00	15.00	24.00	48.00	116.00	40.00
	48	33.00	40.00	25.00	15.00	24.48	48.00	117.00	40.00
	49	33.00	40.00	25.00	16.00	25.00	48.00	117.00	40.00
	50	33.00	40.00	26.00	16.00	25.00	48.00	117.00	40.00
	51	33.00	40.00	26.00	16.00	25.00	48.00	117.00	40.00
	52	33.00	40.00	26.00	16.00	25.00	48.00	117.00	40.00
	53	33.00	40.00	26.00	16.00	26.00	48.00	117.00	40.00
	54	33.54	41.00	26.00	16.00	26.00	48.00	117.00	41.00
	55	34.00	41.00	27.00	16.00	26.00	48.00	117.00	41.00
	56	34.00	41.00	27.00	16.00	26.00	48.00	117.00	41.00
	57	34.00	41.00	27.00	16.00	26.00	48.00	117.00	41.00
	58	34.00	41.00	27.00	16.00	26.00	48.00	117.00	41.00
	59	34.00	41.00	27.59	16.00	26.00	48.00	117.00	41.00
	60	34.00	41.00	28.00	16.00	27.00	48.00	117.00	41.00
	61	34.00	41.00	28.00	16.00	27.00	48.00	118.00	41.00
	62	34.00	41.00	28.00	16.00	27.00	48.00	118.00	41.00
	63	34.00	41.00	28.00	16.00	27.00	48.00	118.00	41.00
	64	34.00	41.00	28.00	16.00	27.00	49.00	118.00	41.00
	65	34.00	41.00	28.00	16.00	27.65	49.00	118.00	41.00
	66	34.00	42.00	28.00	16.00	28.00	49.00	118.00	42.00
	67	34.00	42.00	28.67	16.00	28.00	49.00	118.00	42.00
	68	34.00	42.00	29.00	16.00	28.00	49.00	118.00	42.00
	69	34.00	42.00	29.00	16.00	28.00	49.00	118.00	42.00
	70	35.00	42.00	29.00	16.00	28.00	49.00	118.00	42.00
	71	35.00	42.00	29.00	16.00	28.71	49.00	118.00	42.00
	72	35.00	42.00	29.00	16.00	29.00	49.00	118.00	42.00
	73	35.00	42.00	29.00	16.00	29.00	49.00	118.00	42.00
74	35.00	42.74	29.00	16.00	29.00	49.00	118.00	42.74	
75	35.00	43.00	29.00	16.00	29.00	49.00	118.00	43.00	
76	35.00	43.00	29.00	16.76	30.00	49.00	118.00	43.00	
77	35.00	43.00	29.00	17.00	30.00	49.00	119.00	43.00	
78	35.00	43.00	29.00	17.00	30.00	49.00	119.00	43.00	
79	35.00	43.79	29.00	17.00	30.00	49.79	119.00	43.79	
80	35.00	44.00	29.00	17.00	30.00	50.00	119.00	44.00	
81	35.00	44.00	29.00	17.00	30.00	50.00	119.00	44.00	
82	35.00	44.00	29.00	17.00	30.00	50.00	119.00	44.00	
83	35.00	44.00	29.00	17.00	30.00	50.00	119.00	44.00	

		DB	MT	FLX	AF	AS	EXP1	EXP2	RT
N	Valid	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0
Percentiles	84	35.00	44.00	29.00	17.00	31.00	50.00	119.00	44.00
	85	35.00	45.00	30.00	17.00	31.00	50.00	119.00	45.00
	86	36.00	45.00	30.00	17.00	31.00	50.00	119.00	45.00
	87	36.00	45.00	30.00	18.00	31.00	50.87	119.00	45.00
	88	36.00	45.00	30.00	18.00	32.00	51.00	119.00	45.00
	89	36.00	45.00	30.00	18.00	32.00	51.00	119.00	45.00
	90	36.00	45.00	30.00	18.00	32.00	51.00	119.90	45.00
	91	36.00	45.00	30.00	18.00	32.00	51.00	120.00	45.00
	92	36.00	45.00	30.00	18.00	33.00	51.00	120.00	45.00
	93	36.00	45.00	30.00	18.00	33.00	51.00	120.00	45.00
	94	36.00	45.94	30.00	18.00	33.00	51.00	120.00	45.94
	95	36.00	46.00	30.00	18.00	33.00	51.00	120.00	46.00
	96	36.00	46.00	30.96	18.00	33.00	52.00	120.00	46.00
	97	36.00	46.00	31.00	18.00	33.00	52.00	120.00	46.00
	98	36.00	46.00	31.00	18.00	33.98	52.00	120.00	46.00
	99	36.00	46.00	31.00	18.00	34.00	52.00	120.00	46.00

a. Age = Under-14, Gender = Girls

DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, EXP1 - Explosive power 1, EXP2 - Explosive power 2, RT - Reaction time

Apart from that, for the Under 15 year boys, Speed, Agility, Static Balance and Explosive power 1 were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 15 year boys and is presented in Table 126.

**Table 126**

*Percentile norms constructed on prominent items of Physical fitness of Under 15 year boys irrespective of the type of school*

		SP	AG	SB	EXP1
N	Valid	300	300	300	300
	Missing	0	0	0	0
Percentiles	1	11.200	17.00	3.800	51.00
	2	11.200	17.00	3.800	51.00
	3	11.200	17.00	3.800	51.00
	4	11.200	17.00	3.800	51.00
	5	11.200	17.00	3.800	51.00

		SP	AG	SB	EXP1
N	Valid	300	300	300	300
	Missing	0	0	0	0
Percentiles	6	11.200	17.00	3.800	51.00
	7	11.200	17.00	3.800	51.00
	8	11.200	17.00	3.800	51.00
	9	11.200	17.00	3.900	51.00
	10	11.200	17.00	4.000	52.00
	11	11.300	17.00	4.000	52.00
	12	11.300	17.00	4.000	52.00
	13	11.300	17.00	4.000	52.00
	14	11.300	17.14	4.000	52.00
	15	11.300	18.00	4.000	52.00
	16	11.300	18.00	4.000	52.00
	17	11.300	18.00	4.000	52.00
	18	11.300	18.00	4.000	52.00
	19	11.300	18.00	4.000	52.00
	20	11.300	18.00	4.000	52.20
	21	11.300	18.00	4.000	53.00
	22	11.400	18.00	4.000	53.00
	23	11.400	18.00	4.000	53.00
	24	11.400	18.00	4.000	53.00
	25	11.400	18.00	4.000	53.00
	26	11.400	18.00	4.000	53.00
	27	11.400	18.00	4.000	53.00
	28	11.500	18.00	4.000	53.00
	29	11.500	18.00	4.100	53.29
	30	11.500	18.00	4.100	54.00
	31	11.500	18.00	4.100	54.00
	32	11.500	18.00	4.100	54.00
	33	11.500	18.00	4.100	54.00
	34	11.500	18.00	4.100	54.00
	35	11.500	18.00	4.100	54.00
	36	11.500	18.00	4.100	54.00
	37	11.500	18.00	4.100	54.00
	38	11.500	18.00	4.100	54.00
	39	11.500	18.00	4.100	54.00
	40	11.500	18.00	4.100	54.00

		SP	AG	SB	EXP1
N	Valid	300	300	300	300
	Missing	0	0	0	0
Percentiles	41	11.500	18.00	4.100	54.00
	42	11.500	18.00	4.100	54.00
	43	11.500	18.00	4.100	54.00
	44	11.500	19.00	4.100	54.00
	45	11.500	19.00	4.100	54.00
	46	11.500	19.00	4.100	54.00
	47	11.500	19.00	4.100	55.00
	48	11.500	19.00	4.200	55.00
	49	11.500	19.00	4.200	55.00
	50	11.500	19.00	4.200	55.00
	51	11.500	19.00	4.200	55.00
	52	11.500	19.00	4.200	55.00
	53	11.500	20.00	4.200	55.00
	54	11.500	20.00	4.200	55.00
	55	11.500	20.00	4.200	55.00
	56	11.500	20.00	4.200	55.00
	57	11.500	20.00	4.200	55.00
	58	11.600	20.00	4.200	55.00
	59	11.600	20.00	4.200	55.00
	60	11.600	20.00	4.200	55.00
	61	11.600	20.00	4.200	55.00
	62	11.600	20.00	4.200	55.00
	63	11.600	20.00	4.200	55.00
	64	11.600	20.00	4.200	55.00
	65	11.600	20.00	4.200	55.00
	66	11.600	20.00	4.200	56.00
	67	11.600	20.00	4.200	56.00
	68	11.600	20.00	4.200	56.00
	69	11.600	20.00	4.300	56.00
	70	11.600	20.00	4.300	56.00
	71	11.600	20.00	4.300	56.00
	72	11.600	20.00	4.300	56.00
	73	11.600	20.00	4.300	56.00
	74	11.600	20.00	4.300	56.00
	75	11.600	20.00	4.300	56.00

		SP	AG	SB	EXP1
N	Valid	300	300	300	300
	Missing	0	0	0	0
Percentiles	76	11.600	20.00	4.300	56.00
	77	11.600	20.00	4.300	56.00
	78	11.800	20.00	4.300	56.00
	79	11.800	20.00	4.300	56.00
	80	11.800	20.00	4.300	56.00
	81	11.800	20.00	4.300	56.81
	82	11.800	20.00	4.300	57.00
	83	11.900	20.00	4.300	57.00
	84	11.900	20.00	4.300	57.00
	85	12.000	20.00	4.300	57.00
	86	12.000	20.00	4.300	57.00
	87	12.000	20.00	4.300	57.00
	88	12.000	20.00	4.300	57.00
	89	12.000	20.00	4.300	57.00
	90	12.000	20.00	4.300	57.00
	91	12.000	20.00	4.300	57.00
	92	12.000	20.00	4.300	57.00
	93	12.020	20.00	4.300	57.00
	94	12.020	20.00	4.300	57.00
	95	12.020	20.00	4.300	57.00
96	12.020	20.00	4.300	57.00	
97	12.020	20.00	4.397	57.00	
98	12.020	20.00	4.400	57.00	
99	12.020	20.00	4.400	57.00	

a. Age = Under-15, Gender = Boys

SP – Speed, AG – Agility, SB - Static balance, EXP1 - Explosive power 1

Apart from that, for the Under 15 year girls, Speed, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1 and Reaction time were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 15 year girls and is presented in Table 127.

**Table 127**

*Percentile norms constructed on prominent items of Physical fitness of Under 15 year girls irrespective of the type of school*

		SP	DB	MT	FLX	AF	AS	CRN	ERN	EXPI	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	1	12.000	30.00	33.00	20.00	14.00	14.00	19.200	1400.00	44.00	33.00
	2	12.000	30.00	33.00	20.00	14.00	14.02	19.200	1400.00	44.00	33.00
	3	12.000	30.00	33.03	20.00	14.00	15.00	19.200	1400.00	44.00	33.03
	4	12.000	30.00	34.00	20.00	14.00	15.00	19.200	1400.00	44.00	34.00
	5	12.000	30.00	34.00	20.00	14.00	16.00	19.200	1400.00	44.00	34.00
	6	12.000	30.06	34.00	20.00	14.00	16.00	19.200	1406.00	44.00	34.00
	7	12.000	31.00	34.00	21.00	14.00	16.00	19.200	1500.00	44.00	34.00
	8	12.020	31.00	34.00	21.00	14.00	16.00	19.200	1500.00	44.00	34.00
	9	12.020	31.00	34.09	21.00	14.00	17.00	19.200	1500.00	44.00	34.09
	10	12.020	31.00	35.00	21.00	14.00	17.00	19.200	1500.00	44.00	35.00
	11	12.020	31.00	35.00	21.00	14.00	17.00	19.200	1500.00	44.00	35.00
	12	12.020	31.00	35.00	21.00	14.00	18.00	19.200	1500.00	44.00	35.00
	13	12.020	32.00	35.00	21.00	14.00	18.00	19.200	1500.00	44.00	35.00
	14	12.020	32.00	35.00	22.00	14.00	18.00	19.200	1500.00	44.00	35.00
	15	12.062	32.00	35.00	22.00	14.00	18.00	19.200	1500.00	45.00	35.00
	16	12.300	32.00	35.16	22.00	14.00	19.00	19.200	1500.00	45.00	35.16
	17	12.300	32.00	36.00	22.00	15.00	19.00	19.200	1500.00	45.00	36.00
	18	12.300	32.00	36.00	22.00	15.00	19.00	19.200	1500.00	45.00	36.00
	19	12.300	32.00	36.00	22.00	15.00	19.00	19.238	1500.00	45.00	36.00
	20	12.300	32.00	36.00	22.00	15.00	19.20	19.400	1500.00	45.00	36.00
	21	12.300	32.00	36.00	22.21	15.00	20.00	19.400	1500.00	45.00	36.00
	22	12.300	32.00	37.00	23.00	15.00	20.00	19.400	1500.00	45.00	37.00
	23	12.300	32.00	37.00	23.00	15.00	20.00	19.400	1500.00	45.00	37.00
	24	12.300	32.00	37.00	23.00	15.00	20.00	19.400	1500.00	45.00	37.00
	25	12.300	32.00	37.00	23.00	15.00	20.25	19.400	1500.00	45.00	37.00

		SP	DB	MT	FLX	AF	AS	CRN	ERN	EXP1	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	26	12.300	32.26	37.00	23.00	15.00	21.00	19.400	1500.00	45.00	37.00
	27	12.300	33.00	37.00	23.00	15.00	21.00	19.400	1500.00	45.00	37.00
	28	12.300	33.00	38.00	23.00	15.00	21.00	19.400	1500.00	46.00	38.00
	29	12.300	33.00	38.00	23.00	15.00	21.29	19.900	1500.00	46.00	38.00
	30	12.300	33.00	38.00	23.00	15.00	22.00	19.900	1500.00	46.00	38.00
	31	12.300	33.00	38.00	23.00	15.00	22.00	19.900	1500.00	46.00	38.00
	32	12.300	33.00	38.00	23.00	15.00	22.00	19.900	1500.00	46.00	38.00
	33	12.300	33.00	38.00	23.00	15.00	22.00	19.900	1500.00	46.00	38.00
	34	12.300	33.00	39.00	23.00	15.00	23.00	19.900	1500.00	46.00	39.00
	35	12.300	33.00	39.00	23.00	15.00	23.00	19.900	1500.00	46.00	39.00
	36	12.300	33.00	39.00	24.00	15.00	23.00	19.900	1500.00	46.00	39.00
	37	12.300	33.37	39.00	24.00	15.00	23.00	19.900	1500.00	46.00	39.00
	38	12.300	34.00	39.00	24.00	15.00	23.38	19.900	1500.00	46.00	39.00
	39	12.300	34.00	39.00	24.00	15.00	24.00	19.900	1500.00	46.00	39.00
	40	12.300	34.00	39.00	24.00	15.00	24.00	19.900	1600.00	46.00	39.00
	41	12.300	34.00	39.00	24.00	15.00	24.00	19.900	1600.00	46.00	39.00
	42	12.300	34.00	39.00	24.00	15.00	24.00	19.900	1600.00	46.00	39.00
	43	12.300	34.00	39.00	25.00	15.00	24.43	19.900	1600.00	46.00	39.00
	44	12.600	34.00	39.00	25.00	15.00	25.00	19.900	1600.00	46.00	39.00
	45	12.600	34.00	39.00	25.00	15.00	25.00	19.900	1600.00	46.00	39.00
	46	12.600	34.00	39.00	25.00	15.00	25.00	20.300	1600.00	46.00	39.00
	47	12.600	34.00	39.00	25.00	15.00	25.00	20.300	1600.00	46.00	39.00
	48	12.600	34.00	39.00	25.00	15.00	25.00	20.300	1600.00	46.00	39.00
	49	12.600	34.00	40.00	25.00	15.00	25.00	20.300	1600.00	46.00	40.00
	50	12.600	34.00	40.00	25.00	16.00	26.00	20.300	1600.00	46.00	40.00
	51	12.600	34.00	40.00	26.00	16.00	26.00	20.300	1600.00	46.00	40.00
	52	12.600	35.00	40.00	26.00	16.00	26.00	20.300	1600.00	46.00	40.00
	53	12.600	35.00	40.00	26.00	16.00	26.00	20.300	1600.00	46.00	40.00
	54	12.600	35.00	40.00	26.00	16.00	26.00	20.300	1600.00	46.00	40.00
	55	12.600	35.00	40.00	26.00	16.00	26.00	20.600	1600.00	47.00	40.00
	56	12.600	35.00	40.00	26.00	16.00	26.00	20.600	1600.00	47.00	40.00
	57	12.600	35.00	40.00	26.00	16.00	27.00	20.600	1600.00	47.00	40.00
	58	12.600	35.00	40.00	26.00	16.00	27.00	20.600	1600.00	47.00	40.00
	59	12.600	35.00	40.59	27.00	16.00	27.00	20.600	1600.00	47.00	40.59
	60	12.600	35.00	41.00	27.00	16.00	27.00	20.600	1600.00	47.00	41.00
	61	12.600	35.00	41.00	27.00	16.00	27.00	20.600	1600.00	47.00	41.00
	62	12.600	35.00	41.00	27.00	16.00	28.00	20.600	1600.00	47.00	41.00
	63	12.600	35.00	41.00	27.00	16.00	28.00	20.600	1600.00	47.00	41.00
	64	12.600	35.00	41.00	27.00	16.00	28.00	20.600	1600.00	47.00	41.00
	65	12.600	35.00	41.00	29.00	16.00	28.00	20.600	1600.00	47.00	41.00
	66	12.600	35.00	41.00	29.00	16.00	28.00	20.600	1600.00	47.00	41.00

		SP	DB	MT	FLX	AF	AS	CRN	ERN	EXP1	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	67	12.600	36.00	41.00	29.00	16.00	29.00	20.600	1600.00	47.00	41.00
	68	12.600	36.00	41.00	29.00	16.00	29.00	20.600	1600.00	47.00	41.00
	69	12.600	36.00	42.00	29.00	16.00	29.00	21.100	1600.00	47.00	42.00
	70	12.600	36.00	42.00	29.00	16.00	29.00	21.100	1700.00	47.00	42.00
	71	12.600	36.00	42.00	29.00	16.00	29.00	21.100	1700.00	47.00	42.00
	72	12.600	36.00	42.00	29.00	16.00	29.72	21.100	1700.00	47.00	42.00
	73	12.600	36.00	42.00	29.00	16.00	30.00	21.100	1700.00	47.00	42.00
	74	12.600	36.00	42.00	29.00	16.00	30.00	21.100	1700.00	47.00	42.00
	75	12.600	36.00	42.00	29.00	16.00	30.00	21.100	1700.00	47.00	42.00
	76	12.800	36.00	42.00	29.00	16.00	30.00	21.100	1700.00	47.00	42.00
	77	12.800	36.00	43.00	30.00	16.00	30.00	21.100	1700.00	47.00	43.00
	78	12.900	36.00	43.00	30.00	16.00	30.00	21.100	1700.00	47.00	43.00
	79	12.900	36.00	43.00	30.00	16.00	31.00	21.732	1700.00	47.00	43.00
	80	12.900	36.00	43.00	30.00	17.00	31.00	21.900	1700.00	48.00	43.00
	81	12.900	36.00	43.00	30.00	17.00	31.00	21.900	1700.00	48.00	43.00
	82	12.900	36.00	43.00	30.00	17.00	31.00	21.900	1700.00	48.00	43.00
	83	12.900	37.00	43.00	30.00	17.00	31.00	21.900	1700.00	48.00	43.00
	84	12.900	37.00	43.00	30.00	17.00	32.00	21.900	1700.00	48.00	43.00
	85	12.900	37.00	43.00	30.00	17.00	32.00	21.900	1700.00	48.00	43.00
	86	12.900	37.00	43.00	30.00	17.00	32.00	21.900	1700.00	48.00	43.00
	87	12.900	37.00	43.87	30.87	17.00	32.00	21.900	1700.00	48.00	43.87
	88	12.900	37.00	44.00	31.00	17.00	32.00	21.900	1700.00	48.00	44.00
	89	13.200	37.00	44.00	31.00	17.00	33.00	21.900	1700.00	48.00	44.00
	90	13.200	37.00	44.00	31.00	17.00	33.00	21.900	1700.00	48.00	44.00
	91	13.200	37.00	44.00	31.00	17.00	33.00	21.991	1700.00	48.00	44.00
	92	13.200	37.00	44.00	31.00	17.92	33.00	22.000	1700.00	48.00	44.00
	93	13.200	37.00	44.00	31.00	18.00	33.00	22.000	1700.00	48.00	44.00
	94	13.200	37.00	44.00	31.00	18.00	34.00	22.000	1794.00	48.00	44.00
	95	13.200	37.00	44.95	31.00	18.00	34.00	22.000	1800.00	48.00	44.95
	96	13.200	37.00	45.00	31.00	18.00	34.00	22.000	1800.00	49.00	45.00
	97	13.200	37.00	45.00	32.00	18.00	34.00	22.000	1800.00	49.00	45.00
	98	13.200	37.00	45.00	32.00	18.00	35.00	22.000	1800.00	49.00	45.00
	99	13.200	37.00	45.00	32.00	18.00	35.00	22.000	1800.00	49.00	45.00

a. Age = Under-15, Gender = Girls

SP – Speed, DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, CRN – Coordination, ERN – Endurance, EXP1 - Explosive power 1, RT - Reaction time



Besides, for the Under 16 year boys Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance and Reaction time were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 16 year boys and is presented in Table 128.

**Table 128**

*Percentile norms constructed on prominent items of Physical fitness of Under 16 year boys irrespective of the type of school*

		SB	DB	MT	FLX	AF	AS	CRN	ERN	RT
N	Valid	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0
Percentiles	1	4.000	39.00	23.00	27.00	14.00	24.00	18.900	1900.00	23.00
	2	4.000	39.00	23.00	27.00	14.00	24.00	18.900	1900.00	23.00
	3	4.000	39.00	23.00	27.00	14.00	24.03	18.900	1900.00	23.00
	4	4.000	39.00	23.00	27.00	14.00	25.00	18.900	1900.00	23.00
	5	4.000	39.00	23.00	28.00	14.00	25.00	18.900	2000.00	23.00
	6	4.000	40.00	23.00	28.00	14.00	25.00	18.900	2000.00	23.00
	7	4.000	40.00	23.00	28.00	14.00	25.00	18.900	2000.00	23.00
	8	4.000	40.00	24.00	28.00	14.00	25.00	18.900	2000.00	24.00
	9	4.000	40.00	24.00	28.00	14.00	26.00	18.900	2000.00	24.00
	10	4.000	40.00	24.00	28.00	14.00	26.00	19.000	2000.00	24.00
	11	4.000	40.00	24.00	28.00	14.00	26.00	19.000	2000.00	24.00
	12	4.000	41.00	24.00	29.00	14.00	26.00	19.200	2000.00	24.00
	13	4.000	41.00	24.00	29.00	14.00	28.00	19.200	2000.00	24.00
	14	4.000	41.00	25.00	29.00	14.00	28.00	19.200	2000.00	25.00
	15	4.000	41.00	25.00	29.00	14.00	28.00	19.200	2000.00	25.00
	16	4.000	41.00	25.00	29.00	14.00	28.00	19.200	2000.00	25.00
	17	4.000	41.00	25.00	29.00	14.00	29.00	19.200	2000.00	25.00
	18	4.000	41.18	25.00	29.00	14.00	29.00	19.200	2000.00	25.00
	19	4.100	42.00	25.00	29.00	14.00	29.00	19.500	2000.00	25.00
	20	4.100	42.00	25.00	30.00	15.00	29.00	19.500	2000.00	25.00
	21	4.100	42.00	26.00	30.00	15.00	30.00	19.500	2000.00	26.00
	22	4.100	42.00	26.00	30.00	15.00	30.00	19.500	2000.00	26.00
	23	4.100	42.00	26.00	30.00	15.00	30.00	19.500	2100.00	26.00
	24	4.100	42.00	26.00	30.00	15.00	30.00	19.500	2100.00	26.00

		SB	DB	MT	FLX	AF	AS	CRN	ERN	RT
N	Valid	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0
Percentiles	25	4.100	42.00	26.00	30.00	15.00	30.25	19.500	2100.00	26.00
	26	4.100	43.00	26.26	31.00	15.00	31.00	19.500	2100.00	26.26
	27	4.100	43.00	27.00	31.00	15.00	31.00	19.500	2100.00	27.00
	28	4.100	43.00	27.00	31.00	15.00	31.00	19.500	2100.00	27.00
	29	4.100	43.00	27.00	31.00	15.00	31.00	19.500	2100.00	27.00
	30	4.100	43.00	27.00	31.00	15.00	32.00	19.500	2100.00	27.00
	31	4.100	43.00	27.00	31.00	15.00	32.00	19.600	2100.00	27.00
	32	4.100	43.00	27.00	31.32	15.00	32.00	19.600	2100.00	27.00
	33	4.200	43.00	27.00	32.00	15.00	32.00	19.600	2100.00	27.00
	34	4.200	44.00	27.34	32.00	15.00	32.00	19.600	2100.00	27.34
	35	4.200	44.00	28.00	32.00	15.00	33.00	19.635	2100.00	28.00
	36	4.200	44.00	28.00	32.00	15.00	33.00	19.700	2200.00	28.00
	37	4.200	44.00	28.00	32.00	15.00	33.00	19.700	2200.00	28.00
	38	4.200	44.00	28.00	32.00	15.00	33.00	19.700	2200.00	28.00
	39	4.200	44.00	28.00	33.00	15.00	34.00	19.700	2200.00	28.00
	40	4.200	44.00	29.00	33.00	15.00	34.00	19.700	2200.00	29.00
	41	4.200	44.00	29.00	33.00	15.00	34.00	19.700	2200.00	29.00
	42	4.200	44.42	29.00	33.00	15.00	34.00	19.700	2200.00	29.00
	43	4.200	45.00	29.00	33.00	16.00	34.00	19.700	2200.00	29.00
	44	4.200	45.00	29.00	33.00	16.00	35.00	19.832	2200.00	29.00
	45	4.245	45.00	29.00	33.45	16.00	35.00	20.000	2200.00	29.00
	46	4.300	45.00	29.00	34.00	16.00	35.00	20.000	2200.00	29.00
	47	4.300	45.00	29.00	34.00	16.00	35.00	20.000	2200.00	29.00
	48	4.300	45.00	30.00	34.00	16.00	35.48	20.000	2200.00	30.00
	49	4.300	45.00	30.00	34.00	16.00	36.00	20.000	2200.00	30.00
	50	4.300	45.00	30.00	34.00	16.00	36.00	20.000	2200.00	30.00
	51	4.300	45.00	30.00	34.00	16.00	36.00	20.000	2251.00	30.00
	52	4.300	46.00	30.00	34.00	16.00	36.52	20.000	2300.00	30.00
	53	4.300	46.00	30.00	34.00	16.00	37.00	20.000	2300.00	30.00
	54	4.300	46.00	30.00	35.00	16.00	37.00	20.000	2300.00	30.00
	55	4.300	46.00	30.00	35.00	16.00	37.00	20.000	2300.00	30.00
	56	4.300	46.00	31.00	35.00	16.00	37.00	20.000	2300.00	31.00
	57	4.300	46.00	31.00	35.00	16.00	38.00	20.057	2300.00	31.00
	58	4.300	46.00	31.00	35.00	16.00	38.00	20.100	2300.00	31.00
	59	4.400	47.00	31.00	35.00	16.00	38.00	20.100	2300.00	31.00
	60	4.400	47.00	31.00	35.00	16.00	38.00	20.100	2300.00	31.00
	61	4.400	47.00	31.00	35.00	16.00	38.61	20.100	2300.00	31.00

		SB	DB	MT	FLX	AF	AS	CRN	ERN	RT
N	Valid	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0
Percentiles	62	4.400	47.00	32.00	36.00	16.00	39.00	20.100	2300.00	32.00
	63	4.400	47.00	32.00	36.00	16.00	39.00	20.100	2300.00	32.00
	64	4.400	47.00	32.00	36.00	16.00	39.00	20.100	2300.00	32.00
	65	4.400	47.00	32.00	36.00	16.00	39.00	20.230	2300.00	32.00
	66	4.400	48.00	32.00	36.00	16.00	39.00	20.300	2300.00	32.00
	67	4.400	48.00	32.00	36.67	17.00	40.00	20.300	2300.00	32.00
	68	4.400	48.00	32.00	37.00	17.00	40.00	20.300	2300.00	32.00
	69	4.400	48.00	32.00	37.00	17.00	40.00	20.300	2400.00	32.00
	70	4.470	48.00	32.00	37.00	17.00	40.00	20.300	2400.00	32.00
	71	4.500	48.00	32.00	37.00	17.00	40.00	20.300	2400.00	32.00
	72	4.500	48.00	32.72	37.00	17.00	41.00	20.372	2400.00	32.72
	73	4.500	49.00	33.00	37.00	17.00	41.00	20.400	2400.00	33.00
	74	4.500	49.00	33.00	37.00	17.00	41.00	20.400	2400.00	33.00
	75	4.500	49.00	33.00	37.00	17.00	41.00	20.400	2400.00	33.00
	76	4.500	49.00	33.00	38.00	17.00	41.76	20.400	2400.00	33.00
	77	4.500	49.00	33.00	38.00	17.00	42.00	20.400	2400.00	33.00
	78	4.500	49.00	33.00	38.00	17.00	42.00	20.400	2400.00	33.00
	79	4.500	49.79	33.00	38.00	17.00	42.00	20.479	2400.00	33.00
	80	4.580	50.00	34.00	39.00	17.00	42.00	20.500	2400.00	34.00
	81	4.600	50.00	34.00	39.00	17.00	43.00	20.500	2400.00	34.00
	82	4.600	50.00	34.00	39.00	17.00	43.00	20.500	2400.00	34.00
	83	4.600	50.00	34.00	39.00	17.00	43.00	21.000	2400.00	34.00
	84	4.600	50.00	34.00	39.00	17.00	43.00	21.000	2400.00	34.00
	85	4.600	50.00	34.00	39.00	17.00	43.85	21.000	2400.00	34.00
	86	4.600	51.00	34.86	39.86	17.00	44.00	21.000	2400.00	34.86
	87	4.600	51.00	35.00	40.00	17.00	44.00	21.200	2500.00	35.00
	88	4.600	51.00	35.00	40.00	17.00	44.00	21.200	2500.00	35.00
	89	4.600	51.00	35.00	40.00	17.89	44.89	21.200	2500.00	35.00
	90	4.600	51.00	35.00	40.00	18.00	45.00	21.200	2500.00	35.00
	91	4.600	51.00	35.00	41.00	18.00	45.00	21.200	2500.00	35.00
	92	4.600	51.00	35.00	41.00	18.00	45.00	21.200	2500.00	35.00
	93	4.600	51.00	35.00	41.00	18.00	45.00	21.200	2500.00	35.00
	94	4.600	51.94	35.94	41.00	18.00	46.00	21.200	2500.00	35.94
	95	4.695	52.00	36.00	41.00	18.00	46.00	22.100	2500.00	36.00
	96	4.700	52.00	36.00	41.96	18.00	46.00	22.100	2500.00	36.00
	97	4.700	52.00	36.00	42.00	18.00	46.00	22.100	2500.00	36.00
	98	4.700	53.00	36.00	42.00	18.00	47.00	22.100	2500.00	36.00
	99	4.700	53.00	36.00	42.00	18.00	47.00	22.100	2500.00	36.00

a. Age = Under-16, Gender = Boys

SB - Static balance, DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, CRN – Coordination, ERN – Endurance, RT - Reaction time

Apart from that, for the Under 16 year girls, Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance,

Explosive Power 1 and Reaction time were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 16 year girls and is presented in Table 129.

**Table 129**

*Percentile norms constructed on prominent items of Physical fitness of Under 16 year girls irrespective of the type of school*

		SP	AG	DB	MT	FLX	AF	AS	ERN	EXP1	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	1	12.000	19.00	32.00	28.00	21.00	14.00	15.00	1400.00	47.00	28.00
	2	12.000	19.00	32.00	28.00	21.00	14.00	15.00	1400.00	47.00	28.00
	3	12.000	19.00	32.00	28.00	21.00	14.00	15.00	1400.00	47.00	28.00
	4	12.000	19.00	32.00	28.00	21.00	14.00	16.00	1400.00	47.00	28.00
	5	12.000	19.00	32.00	28.00	21.00	14.00	16.00	1500.00	47.00	28.00
	6	12.000	19.00	32.00	28.00	21.06	14.00	16.00	1500.00	47.00	28.00
	7	12.000	19.00	32.00	28.00	22.00	15.00	16.00	1500.00	47.00	28.00
	8	12.100	19.00	33.00	28.00	22.00	15.00	17.00	1500.00	47.00	28.00
	9	12.100	19.00	33.00	28.00	22.00	15.00	17.00	1500.00	47.00	28.00
	10	12.100	19.00	33.00	28.10	22.00	15.00	17.00	1500.00	47.00	28.10
	11	12.100	19.00	33.00	29.00	22.00	15.00	17.00	1500.00	47.00	29.00
	12	12.100	19.00	33.00	29.00	22.00	15.00	18.00	1500.00	47.00	29.00
	13	12.100	19.00	33.00	29.00	22.00	15.00	18.00	1500.00	47.00	29.00
	14	12.400	19.00	33.00	29.00	22.00	15.00	18.00	1500.00	48.00	29.00
	15	12.400	19.00	33.00	29.00	23.00	15.00	18.00	1500.00	48.00	29.00
	16	12.400	19.00	33.00	29.00	23.00	15.00	18.16	1500.00	48.00	29.00
	17	12.400	19.00	34.00	29.00	23.00	15.00	19.00	1500.00	48.00	29.00
	18	12.400	20.00	34.00	29.00	23.00	15.00	19.00	1500.00	48.00	29.00
	19	12.400	20.00	34.00	29.00	23.00	15.00	19.00	1500.00	48.00	29.00
	20	12.400	20.00	34.00	29.00	23.00	15.00	20.00	1500.00	48.00	29.00
	21	12.400	20.00	34.00	29.21	24.00	15.00	20.00	1500.00	48.00	29.21
	22	12.400	20.00	34.00	30.00	24.00	15.00	20.00	1500.00	48.00	30.00
	23	12.400	20.00	34.00	30.00	24.00	15.00	20.00	1523.00	48.00	30.00
	24	12.600	20.00	34.00	30.00	24.00	15.00	20.00	1600.00	48.00	30.00
	25	12.600	20.00	34.00	30.00	24.00	15.00	21.00	1600.00	48.00	30.00
	26	12.600	20.00	35.00	30.00	25.00	15.00	21.00	1600.00	49.00	30.00
	27	12.600	20.00	35.00	30.00	25.00	15.00	21.00	1600.00	49.00	30.00
	28	12.600	20.00	35.00	30.00	25.00	15.00	21.00	1600.00	49.00	30.00

		SP	AG	DB	MT	FLX	AF	AS	ERN	EXP1	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	29	12.600	20.00	35.00	31.00	25.00	15.00	21.29	1600.00	49.00	31.00
	30	12.600	20.00	35.00	31.00	25.00	15.00	22.00	1600.00	49.00	31.00
	31	12.600	20.00	35.00	31.00	25.31	15.00	22.00	1600.00	49.00	31.00
	32	12.600	20.00	35.00	31.00	26.00	15.32	22.00	1600.00	49.00	31.00
	33	12.600	20.00	35.00	31.00	26.00	16.00	22.00	1600.00	50.00	31.00
	34	12.634	20.00	35.00	31.34	26.00	16.00	23.00	1600.00	50.00	31.34
	35	12.700	20.00	35.00	32.00	26.00	16.00	23.00	1600.00	50.00	32.00
	36	12.700	20.00	35.00	32.00	26.00	16.00	23.00	1600.00	50.00	32.00
	37	12.700	20.00	36.00	32.00	26.00	16.00	23.00	1600.00	50.00	32.00
	38	12.700	20.00	36.00	32.00	26.00	16.00	24.00	1600.00	50.00	32.00
	39	12.700	20.00	36.00	32.00	26.00	16.00	24.00	1600.00	50.00	32.00
	40	12.700	20.00	36.00	32.00	27.00	16.00	24.00	1600.00	50.00	32.00
	41	12.700	20.00	36.00	32.41	27.00	16.00	24.00	1600.00	50.00	32.41
	42	12.700	20.00	36.00	33.00	27.00	16.00	25.00	1600.00	50.00	33.00
	43	12.700	20.00	36.00	33.00	27.00	16.00	25.00	1600.00	50.00	33.00
	44	12.700	20.00	36.00	33.00	27.00	16.00	25.00	1600.00	50.00	33.00
	45	12.700	20.00	36.00	33.00	27.00	16.00	25.00	1600.00	50.00	33.00
	46	12.700	20.00	36.00	33.00	27.00	16.00	25.46	1600.00	50.00	33.00
	47	12.700	20.00	37.00	33.00	28.00	16.00	26.00	1600.00	50.00	33.00
	48	12.700	20.00	37.00	33.00	28.00	16.00	26.00	1600.00	50.00	33.00
	49	12.700	20.00	37.00	33.00	28.00	16.00	26.00	1600.00	50.00	33.00
	50	12.700	20.00	37.00	33.00	28.00	16.00	26.50	1600.00	50.00	33.00
	51	12.700	20.00	37.00	33.00	28.00	16.00	27.00	1600.00	50.00	33.00
	52	12.700	20.00	37.00	34.00	28.00	16.00	27.00	1600.00	50.00	34.00
	53	12.700	20.00	37.00	34.00	28.00	16.00	27.00	1600.00	50.00	34.00
	54	12.700	20.00	37.00	34.00	28.00	16.00	27.00	1600.00	50.00	34.00
	55	12.700	20.00	37.00	34.00	28.00	17.00	28.00	1655.00	50.00	34.00
	56	12.700	20.00	37.00	34.00	28.56	17.00	28.00	1700.00	50.00	34.00
	57	12.700	20.00	37.00	34.00	29.00	17.00	28.00	1700.00	50.00	34.00
	58	12.700	20.00	37.00	34.00	29.00	17.00	28.00	1700.00	51.00	34.00
	59	12.700	20.00	37.00	34.00	29.00	17.00	28.00	1700.00	51.00	34.00
	60	12.900	20.00	38.00	34.00	29.00	17.00	28.60	1700.00	51.00	34.00
	61	12.900	20.00	38.00	34.00	29.00	17.00	29.00	1700.00	51.00	34.00
	62	12.900	20.00	38.00	35.00	29.00	17.00	29.00	1700.00	51.00	35.00
	63	12.900	20.00	38.00	35.00	30.00	17.00	29.00	1700.00	51.00	35.00
	64	12.900	20.00	38.00	35.00	30.00	17.00	29.00	1700.00	51.00	35.00
	65	12.900	20.00	38.00	35.00	30.00	17.00	30.00	1700.00	51.00	35.00
	66	12.900	20.00	38.00	35.00	30.00	17.00	30.00	1700.00	51.00	35.00
	67	12.900	20.00	38.00	35.00	30.00	17.00	30.00	1700.00	51.00	35.00

		SP	AG	DB	MT	FLX	AF	AS	ERN	EXPI	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	68	12.900	20.00	38.00	35.00	30.00	17.00	30.00	1700.00	51.00	35.00
	69	12.900	20.00	38.00	35.00	31.00	17.00	30.00	1700.00	51.00	35.00
	70	12.900	20.00	39.00	35.00	31.00	17.00	31.00	1700.00	51.00	35.00
	71	12.900	20.00	39.00	35.00	31.00	17.00	31.00	1700.00	51.00	35.00
	72	12.900	20.00	39.00	35.72	31.00	17.00	31.00	1700.00	51.00	35.72
	73	12.900	20.00	39.00	36.00	31.00	17.00	31.00	1700.00	51.73	36.00
	74	12.900	20.00	39.00	36.00	31.00	17.00	32.00	1700.00	52.00	36.00
	75	12.900	20.00	39.00	36.00	31.00	17.00	32.00	1700.00	52.00	36.00
	76	12.900	20.00	39.00	36.00	31.00	17.00	32.00	1700.00	52.00	36.00
	77	12.900	20.00	39.00	36.00	32.00	17.00	32.00	1700.00	52.00	36.00
	78	12.900	20.00	39.00	36.00	32.00	17.00	33.00	1700.00	52.00	36.00
	79	13.000	20.00	39.79	36.79	32.00	17.00	33.00	1700.00	52.00	36.79
	80	13.000	20.00	40.00	37.00	32.00	17.00	33.00	1700.00	52.00	37.00
	81	13.000	20.00	40.00	37.00	32.00	17.00	33.81	1700.00	52.00	37.00
	82	13.000	20.00	40.00	37.00	32.00	18.00	34.00	1700.00	52.00	37.00
	83	13.000	20.00	40.00	37.00	33.00	18.00	34.00	1700.00	52.00	37.00
	84	13.000	20.00	40.00	37.00	33.00	18.00	34.00	1700.00	52.00	37.00
	85	13.000	20.00	40.00	37.00	33.00	18.00	34.85	1700.00	52.00	37.00
	86	13.000	20.00	40.00	37.00	33.00	18.00	35.00	1700.00	52.00	37.00
	87	13.000	20.00	41.00	37.00	33.00	18.00	35.00	1700.00	52.00	37.00
	88	13.000	20.00	41.00	38.00	33.00	18.00	35.00	1700.00	52.00	38.00
	89	13.000	20.00	41.00	38.00	34.00	18.00	35.00	1700.00	52.00	38.00
	90	13.000	20.00	41.00	38.00	34.00	18.00	35.00	1700.00	53.00	38.00
	91	13.000	20.00	41.00	38.00	34.00	18.00	36.00	1800.00	53.00	38.00
	92	13.000	20.00	41.00	38.00	34.00	18.00	36.00	1800.00	53.00	38.00
	93	13.000	20.00	41.00	38.00	34.00	18.00	36.00	1800.00	53.00	38.00
	94	13.000	21.00	41.00	38.94	34.00	18.00	36.00	1800.00	53.00	38.94
	95	13.000	21.00	42.00	39.00	34.00	18.00	36.00	1800.00	53.00	39.00
	96	13.200	21.00	42.00	39.00	34.00	18.00	36.00	1800.00	53.00	39.00
	97	13.200	21.00	42.00	39.00	34.97	18.00	37.00	1800.00	53.00	39.00
	98	13.200	21.00	42.00	39.00	35.00	18.00	37.00	1800.00	53.00	39.00
	99	13.200	21.00	42.00	39.00	35.00	18.00	37.00	1800.00	53.00	39.00

a. Age = Under-16, Gender = Girls

SP – Speed, AG – Agility, DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, ERN – Endurance, EXPI - Explosive power 1, RT - Reaction time

Apart from that, for the Under 17 year boys, Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power

1, Explosive Power 2 and Reaction time were found to be the prominent items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 17 year boys and is presented in Table 130.

**Table 130**

*Percentile norms constructed on prominent items of Physical fitness of Under 17 year boys irrespective of the type of school*

		SP	AG	DB	MT	FLX	AF	AS	EXP1	EXP2	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	1	10.100	16.00	40.00	16.00	27.00	14.00	25.00	52.00	131.00	16.00
	2	10.102	16.00	40.00	16.00	27.00	14.00	25.00	52.00	131.00	16.00
	3	10.200	16.00	40.00	17.00	27.00	14.00	25.00	52.00	131.00	17.00
	4	10.200	16.00	40.00	17.00	28.00	14.00	26.00	52.00	131.00	17.00
	5	10.200	16.00	40.00	17.00	28.00	14.00	26.00	52.00	131.00	17.00
	6	10.200	16.00	40.00	17.00	28.00	14.00	26.00	52.00	131.00	17.00
	7	10.200	16.00	40.07	17.00	28.00	14.00	26.00	52.00	132.00	17.00
	8	10.200	16.00	41.00	17.00	28.00	14.00	27.00	53.00	132.00	17.00
	9	10.200	16.00	41.00	18.00	28.00	14.00	27.00	53.00	132.00	18.00
	10	10.200	16.00	41.00	18.00	28.00	14.00	27.00	53.00	132.00	18.00
	11	10.300	16.00	41.00	18.00	28.11	14.00	28.00	53.00	132.00	18.00
	12	10.300	16.00	42.00	18.00	29.00	14.00	28.00	53.00	132.00	18.00
	13	10.300	16.00	42.00	18.00	29.00	15.00	28.00	53.00	132.00	18.00
	14	10.300	16.00	42.00	18.14	29.00	15.00	29.00	53.00	132.00	18.14
	15	10.300	16.00	42.00	19.00	29.00	15.00	29.00	53.00	132.00	19.00
	16	10.300	17.00	42.16	19.00	29.00	15.00	29.00	53.00	132.00	19.00
	17	10.300	17.00	43.00	19.00	29.00	15.00	29.00	53.00	132.00	19.00
	18	10.300	17.00	43.00	19.00	29.00	15.00	30.00	53.00	132.00	19.00
	19	10.300	17.00	43.00	19.00	29.00	15.00	30.00	53.00	133.00	19.00
	20	10.400	17.00	43.00	19.20	29.00	15.00	30.00	53.00	133.00	19.20
	21	10.400	17.00	43.00	20.00	29.21	15.00	30.21	53.00	133.00	20.00
	22	10.400	17.00	43.00	20.00	30.00	15.00	31.00	53.00	133.00	20.00
	23	10.400	17.00	44.00	20.00	30.00	15.00	31.00	53.00	133.00	20.00
	24	10.400	17.00	44.00	20.00	30.00	15.00	31.00	53.00	133.00	20.00
	25	10.400	17.00	44.00	20.00	30.00	15.00	31.25	53.00	133.00	20.00
	26	10.400	17.00	44.00	20.26	30.00	15.00	32.00	53.00	133.00	20.26
	27	10.400	17.00	44.00	21.00	30.00	15.00	32.00	54.00	133.00	21.00

		SP	AG	DB	MT	FLX	AF	AS	EXP1	EXP2	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	28	10.400	17.00	44.00	21.00	30.00	15.00	32.28	54.00	133.00	21.00
	29	10.400	17.00	45.00	21.00	31.00	15.00	33.00	54.00	133.00	21.00
	30	10.400	17.00	45.00	21.00	31.00	15.00	33.00	54.00	133.00	21.00
	31	10.400	17.00	45.00	21.31	31.00	15.00	33.00	54.00	133.00	21.31
	32	10.500	17.00	45.00	22.00	31.00	16.00	34.00	54.00	133.00	22.00
	33	10.500	17.00	45.00	22.00	31.00	16.00	34.00	54.00	133.00	22.00
	34	10.500	17.00	45.00	22.00	31.00	16.00	34.00	54.00	133.00	22.00
	35	10.500	17.00	45.00	22.00	32.00	16.00	34.35	54.00	133.00	22.00
	36	10.500	17.00	45.00	22.00	32.00	16.00	35.00	54.00	133.00	22.00
	37	10.500	17.00	45.00	22.00	32.00	16.00	35.00	54.00	134.00	22.00
	38	10.500	17.00	45.00	22.00	32.00	16.00	35.00	54.00	134.00	22.00
	39	10.500	17.00	46.00	22.00	32.00	16.00	35.39	54.00	134.00	22.00
	40	10.540	17.00	46.00	23.00	32.00	16.00	36.00	54.00	134.00	23.00
	41	10.600	17.00	46.00	23.00	32.00	16.00	36.00	54.00	134.00	23.00
	42	10.600	17.00	46.00	23.00	32.00	16.00	36.00	54.00	134.00	23.00
	43	10.600	17.00	46.00	23.00	33.00	16.00	36.00	54.00	134.00	23.00
	44	10.600	17.44	46.00	23.00	33.00	16.00	37.00	54.00	134.00	23.00
	45	10.600	18.00	47.00	23.00	33.00	16.00	37.00	54.45	134.00	23.00
	46	10.600	18.00	47.00	23.00	33.00	16.00	37.00	55.00	134.00	23.00
	47	10.600	18.00	47.00	23.00	33.00	16.00	39.00	55.00	134.00	23.00
	48	10.600	18.00	47.00	24.00	33.00	16.00	39.00	55.00	134.00	24.00
	49	10.600	18.00	48.00	24.00	34.00	16.00	39.00	55.00	134.00	24.00
	50	10.600	18.00	48.00	24.00	34.00	16.00	40.00	55.00	134.00	24.00
	51	10.600	18.00	48.00	24.00	34.00	16.00	40.00	55.00	134.00	24.00
	52	10.700	18.00	48.00	24.00	34.00	17.00	40.00	55.00	134.00	24.00
	53	10.700	18.00	48.00	25.00	36.00	17.00	40.00	55.00	134.00	25.00
	54	10.700	18.00	48.00	25.00	36.00	17.00	41.00	55.00	134.00	25.00
	55	10.700	18.00	48.00	25.00	36.00	17.00	41.00	55.00	134.00	25.00
	56	10.700	18.00	49.00	25.00	36.00	17.00	41.00	55.00	134.00	25.00
	57	10.700	18.00	49.00	25.00	36.00	17.00	42.00	55.00	134.00	25.00
	58	10.700	18.00	49.00	25.00	37.00	17.00	42.00	55.00	134.00	25.00
	59	10.700	18.00	49.59	26.00	37.00	17.00	42.00	55.00	134.59	26.00
	60	10.700	18.00	50.00	26.00	37.00	17.00	42.00	55.00	135.00	26.00
	61	10.700	18.00	50.00	26.00	37.00	17.00	43.00	55.00	135.00	26.00
	62	10.700	18.00	50.00	26.00	39.00	17.00	43.00	55.00	135.00	26.00
	63	10.700	19.00	50.00	26.00	39.00	17.00	43.00	55.00	135.00	26.00
	64	10.700	19.00	50.00	26.00	39.00	17.00	43.00	55.00	135.00	26.00
	65	10.700	19.00	50.00	26.00	39.00	17.00	44.00	55.00	135.00	26.00
	66	10.766	19.00	50.00	26.00	39.00	17.00	44.00	55.66	135.00	26.00
	67	10.800	19.00	51.00	26.00	39.00	17.00	44.00	56.00	135.00	26.00
	68	10.800	19.00	51.00	26.00	39.68	17.00	44.68	56.00	135.00	26.00



		SP	AG	DB	MT	FLX	AF	AS	EXP1	EXP2	RT
N	Valid	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0
Percentiles	69	10.800	19.00	51.00	26.69	40.00	17.00	45.00	56.00	135.00	26.69
	70	10.800	19.00	51.00	27.00	40.00	17.00	45.00	56.00	135.00	27.00
	71	10.800	19.00	52.00	27.00	40.00	17.00	45.00	56.00	135.00	27.00
	72	10.800	19.00	52.00	27.00	40.00	17.00	46.00	56.00	135.00	27.00
	73	10.800	19.00	52.00	27.00	40.00	17.00	46.00	56.00	135.00	27.00
	74	10.900	19.00	52.00	27.00	41.00	17.00	46.00	56.00	135.00	27.00
	75	10.900	19.00	53.00	28.00	41.00	17.00	46.00	56.00	136.00	28.00
	76	10.900	19.00	53.00	28.00	41.00	17.00	46.76	56.00	136.00	28.00
	77	10.900	19.00	53.00	28.00	41.00	17.00	47.00	56.00	136.00	28.00
	78	10.900	19.00	53.00	28.00	41.00	17.00	47.00	56.00	136.00	28.00
	79	10.900	19.00	54.00	28.00	41.00	17.79	47.00	56.00	136.00	28.00
	80	10.900	19.00	54.00	28.00	41.80	18.00	47.00	56.00	136.00	28.00
	81	10.900	19.00	54.00	28.00	42.00	18.00	47.81	56.00	136.00	28.00
	82	10.982	19.00	54.00	28.00	42.00	18.00	48.00	57.00	136.00	28.00
	83	11.000	19.00	54.00	28.00	42.00	18.00	48.00	57.00	136.00	28.00
	84	11.000	19.00	54.00	28.00	42.00	18.00	48.00	57.00	136.00	28.00
	85	11.000	19.00	55.00	28.00	43.00	18.00	48.00	57.00	136.00	28.00
	86	11.000	19.00	55.00	29.00	43.00	18.00	49.00	57.00	136.00	29.00
	87	11.000	19.00	55.00	29.00	43.00	18.00	49.00	57.00	136.00	29.00
	88	11.000	19.00	55.00	29.00	43.00	18.00	49.00	57.00	136.00	29.00
	89	11.089	19.00	55.00	29.00	43.00	18.00	49.00	57.00	137.00	29.00
	90	11.100	20.00	55.00	29.00	43.90	18.00	50.00	57.00	137.00	29.00
	91	11.100	20.00	55.00	29.00	44.00	18.00	50.00	58.00	137.00	29.00
	92	11.100	20.00	55.92	29.00	44.00	18.00	50.00	58.00	137.00	29.00
	93	11.100	20.00	56.00	29.00	44.00	18.00	50.00	58.00	137.00	29.00
	94	11.100	20.00	56.00	29.00	44.00	18.00	50.00	58.00	137.00	29.00
	95	11.100	20.00	56.00	29.00	44.00	18.00	50.95	58.00	137.00	29.00
	96	11.200	20.00	56.00	30.00	44.00	18.00	51.00	58.00	137.00	30.00
	97	11.200	20.00	56.00	30.00	45.00	18.00	51.00	59.00	137.00	30.00
	98	11.200	20.00	56.98	30.00	45.00	18.00	51.00	59.00	138.00	30.00
	99	11.200	20.00	57.00	30.00	45.00	18.00	51.00	59.00	138.00	30.00

a. Age = Under-17, Gender = Boys

SP – Speed, AG – Agility, DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, EXP1 - Explosive power 1, EXP2 - Explosive power 2, RT - Reaction time

Apart from that, for the Under 17 year girls, Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive Power 1 and Reaction time were found to be the prominent

items and hence the Physical fitness percentile norms were constructed only on those variables for the Under 17 year girls and is presented in Table 131.

**Table 131**

*Percentile norms constructed on prominent items of Physical fitness of Under 17 year girls irrespective of the type of school*

N		SP	AG	SB	DB	MT	FLX	AF	AS	ERN	EXPI	RT
	Valid	300	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0	0
Percentiles	1	11.900	19.00	3.700	33.00	26.00	21.00	14.00	15.00	1600.00	49.00	26.00
	2	11.900	19.00	3.700	33.00	26.00	21.00	14.00	15.00	1600.00	49.00	26.00
	3	11.900	19.00	3.800	33.00	26.00	22.00	14.00	16.00	1600.00	49.00	26.00
	4	11.904	19.00	3.800	33.00	26.00	22.00	14.00	16.00	1600.00	49.00	26.00
	5	12.000	19.00	3.800	33.00	26.05	22.00	14.00	16.00	1600.00	49.00	26.05
	6	12.000	19.00	3.800	33.06	27.00	22.00	14.00	16.00	1600.00	49.00	27.00
	7	12.000	19.00	3.800	34.00	27.00	22.00	14.00	16.07	1600.00	49.00	27.00
	8	12.000	19.00	3.800	34.00	27.00	22.08	14.00	17.00	1600.00	49.00	27.00
	9	12.000	19.00	3.800	34.00	27.00	23.00	14.00	17.00	1600.00	49.00	27.00
	10	12.000	19.00	3.800	34.00	27.00	23.00	14.00	17.00	1600.00	49.00	27.00
	11	12.000	19.00	3.800	34.00	27.00	23.00	14.00	17.11	1700.00	49.00	27.00
	12	12.100	19.00	3.800	35.00	27.00	23.00	14.00	18.00	1700.00	49.00	27.00
	13	12.100	19.00	3.900	35.00	27.00	24.00	14.00	18.00	1700.00	50.00	27.00
	14	12.100	19.00	3.900	35.00	27.00	24.00	15.00	18.00	1700.00	50.00	27.00
	15	12.100	19.00	3.900	35.00	27.00	24.00	15.00	18.00	1700.00	50.00	27.00
	16	12.100	19.00	3.900	35.00	28.00	24.00	15.00	19.00	1700.00	50.00	28.00
	17	12.100	19.00	3.900	35.00	28.00	24.00	15.00	19.00	1700.00	50.00	28.00
	18	12.100	19.00	3.900	36.00	28.00	24.00	15.00	19.00	1700.00	50.00	28.00
	19	12.100	19.00	3.900	36.00	28.00	24.00	15.00	19.00	1700.00	50.00	28.00
	20	12.100	19.00	3.900	36.00	28.00	25.00	15.00	20.00	1700.00	50.00	28.00
	21	12.100	19.00	3.921	36.00	28.00	25.00	15.00	20.00	1700.00	50.00	28.00
	22	12.100	19.00	4.000	36.00	28.22	25.00	15.00	20.00	1700.00	50.00	28.22
	23	12.100	19.00	4.000	36.00	29.00	25.00	15.00	20.00	1700.00	50.00	29.00
	24	12.100	19.00	4.000	36.00	29.00	26.00	15.00	20.00	1700.00	50.00	29.00
	25	12.100	19.00	4.000	36.25	29.00	26.00	15.00	20.00	1700.00	50.00	29.00
	26	12.100	19.00	4.000	37.00	29.00	26.00	15.00	21.00	1700.00	50.00	29.00
	27	12.200	19.00	4.000	37.00	29.00	26.00	15.00	21.00	1700.00	50.00	29.00
	28	12.200	19.00	4.000	37.00	29.00	26.00	15.00	21.00	1700.00	50.00	29.00
	29	12.200	19.00	4.000	37.00	29.00	26.00	15.00	21.29	1700.00	50.00	29.00
	30	12.200	19.00	4.000	37.00	30.00	27.00	15.00	22.00	1700.00	50.00	30.00

		SP	AG	SB	DB	MT	FLX	AF	AS	ERN	EXPI	RT
N	Valid	300	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0	0
Percentiles	31	12.200	19.00	4.000	38.00	30.00	27.00	15.00	22.00	1700.00	50.00	30.00
	32	12.200	19.00	4.000	38.00	30.00	27.00	15.00	22.00	1700.00	50.00	30.00
	33	12.200	19.00	4.100	38.00	30.00	27.00	15.00	23.00	1700.00	50.00	30.00
	34	12.200	19.00	4.100	38.00	30.00	27.00	15.00	23.00	1700.00	50.00	30.00
	35	12.200	19.00	4.100	38.00	30.35	27.35	15.00	23.00	1700.00	50.00	30.35
	36	12.300	19.00	4.100	38.00	31.00	28.00	15.00	23.00	1700.00	50.00	31.00
	37	12.300	19.00	4.100	39.00	31.00	28.00	16.00	23.37	1700.00	50.37	31.00
	38	12.300	19.00	4.100	39.00	31.00	28.00	16.00	24.00	1700.00	51.00	31.00
	39	12.300	19.00	4.100	39.00	31.00	28.00	16.00	24.00	1700.00	51.00	31.00
	40	12.300	19.00	4.100	39.00	31.00	28.00	16.00	24.00	1700.00	51.00	31.00
	41	12.300	19.00	4.200	39.00	31.00	28.00	16.00	25.00	1741.00	51.00	31.00
	42	12.300	19.00	4.200	39.00	31.00	28.00	16.00	25.00	1800.00	51.00	31.00
	43	12.300	19.00	4.200	40.00	31.00	29.00	16.00	25.00	1800.00	51.00	31.00
	44	12.600	19.00	4.200	40.00	31.00	29.00	16.00	25.00	1800.00	51.00	31.00
	45	12.600	19.00	4.200	40.00	31.00	29.00	16.00	26.00	1800.00	51.00	31.00
	46	12.600	19.46	4.200	40.00	32.00	29.00	16.00	26.00	1800.00	51.00	32.00
	47	12.600	20.00	4.200	40.00	32.00	29.00	16.00	26.00	1800.00	51.00	32.00
	48	12.600	20.00	4.200	40.00	32.00	29.00	16.00	26.00	1800.00	51.00	32.00
	49	12.600	20.00	4.200	41.00	32.00	29.00	16.00	27.00	1800.00	51.00	32.00
	50	12.600	20.00	4.200	41.00	32.00	29.00	16.00	27.00	1800.00	51.00	32.00
	51	12.600	20.00	4.300	41.00	32.00	30.00	16.00	27.00	1800.00	51.00	32.00
	52	12.700	20.00	4.300	41.00	32.00	30.00	16.00	27.00	1800.00	51.00	32.00
	53	12.700	20.00	4.300	41.00	33.00	30.00	16.00	27.53	1800.00	51.00	33.00
	54	12.700	20.00	4.300	41.00	33.00	30.00	16.00	28.00	1800.00	51.00	33.00
	55	12.700	20.00	4.300	42.00	33.00	30.00	16.00	28.00	1800.00	51.00	33.00
	56	12.700	20.00	4.300	42.00	33.00	30.00	16.00	28.00	1800.00	51.00	33.00
	57	12.700	20.00	4.300	42.00	33.00	30.57	17.00	28.57	1800.00	51.00	33.00
	58	12.700	20.00	4.300	42.00	33.00	31.00	17.00	29.00	1800.00	51.00	33.00
	59	12.700	20.00	4.300	42.00	33.00	31.00	17.00	29.00	1800.00	51.00	33.00
	60	12.700	20.00	4.400	42.00	33.00	31.00	17.00	29.00	1800.00	51.00	33.00
	61	12.761	20.00	4.400	42.00	33.00	31.00	17.00	29.00	1800.00	52.00	33.00
	62	12.800	20.00	4.400	43.00	33.00	31.00	17.00	30.00	1800.00	52.00	33.00
	63	12.800	20.00	4.400	43.00	34.00	33.00	17.00	30.00	1800.00	52.00	34.00
	64	12.800	20.00	4.400	43.00	34.00	33.00	17.00	30.00	1800.00	52.00	34.00
	65	12.800	20.00	4.400	43.00	34.00	33.00	17.00	30.00	1800.00	52.00	34.00
	66	12.800	20.00	4.400	43.00	34.00	33.00	17.00	30.00	1800.00	52.00	34.00
	67	12.800	20.00	4.400	43.00	34.00	33.00	17.00	30.00	1800.00	52.00	34.00
	68	12.800	20.00	4.468	43.68	34.00	33.00	17.00	31.00	1800.00	52.00	34.00
	69	12.800	20.00	4.500	44.00	34.00	34.00	17.00	31.00	1800.00	52.00	34.00

		SP	AG	SB	DB	MT	FLX	AF	AS	ERN	EXPI	RT
N	Valid	300	300	300	300	300	300	300	300	300	300	300
	Missing	0	0	0	0	0	0	0	0	0	0	0
Percentiles	70	12.800	20.00	4.500	44.00	34.00	34.00	17.00	31.00	1800.00	52.00	34.00
	71	12.800	20.00	4.500	44.00	34.00	34.00	17.00	31.00	1800.00	52.00	34.00
	72	12.800	20.00	4.500	44.00	34.00	34.00	17.00	32.00	1800.00	52.00	34.00
	73	12.900	20.00	4.500	44.00	34.00	34.00	17.00	32.00	1900.00	52.00	34.00
	74	12.900	20.00	4.500	44.00	34.00	35.00	17.00	32.00	1900.00	52.00	34.00
	75	12.900	20.00	4.600	45.00	34.00	35.00	17.00	32.00	1900.00	52.00	34.00
	76	12.900	20.00	4.600	45.00	34.00	35.00	17.00	33.00	1900.00	52.00	34.00
	77	12.900	20.00	4.600	45.00	34.00	35.00	17.00	33.00	1900.00	52.00	34.00
	78	12.900	20.00	4.600	45.00	34.00	35.00	17.00	33.00	1900.00	52.00	34.00
	79	12.900	20.00	4.600	45.00	34.00	35.00	17.00	33.00	1900.00	52.00	34.00
	80	12.900	20.00	4.700	45.00	34.00	36.00	17.00	33.00	1900.00	52.00	34.00
	81	12.900	20.00	4.700	45.00	34.00	36.00	17.00	34.00	1900.00	52.00	34.00
	82	12.900	20.00	4.700	46.00	35.00	36.00	17.00	34.00	1900.00	52.00	35.00
	83	12.900	20.00	4.700	46.00	35.00	36.00	18.00	34.00	1900.00	52.00	35.00
	84	12.900	20.00	4.700	46.00	35.00	36.00	18.00	34.00	1900.00	52.00	35.00
	85	12.900	20.00	4.700	46.00	35.00	36.85	18.00	35.00	1900.00	52.85	35.00
	86	12.900	20.00	4.700	46.00	35.00	37.00	18.00	35.00	1900.00	53.00	35.00
	87	12.900	20.00	4.700	46.00	35.00	37.00	18.00	35.00	1900.00	53.00	35.00
	88	12.900	20.00	4.800	46.00	35.00	37.00	18.00	35.00	1900.00	53.00	35.00
	89	12.900	20.00	4.800	46.00	35.00	37.00	18.00	36.00	1900.00	53.00	35.00
90	12.900	20.00	4.800	47.00	35.00	37.00	18.00	36.00	1900.00	53.00	35.00	
91	13.000	20.00	4.800	47.00	35.00	37.91	18.00	36.00	2000.00	53.00	35.00	
92	13.000	20.00	4.800	47.00	35.00	38.00	18.00	36.00	2000.00	53.00	35.00	
93	13.000	20.00	4.800	47.00	35.00	38.00	18.00	36.00	2000.00	53.00	35.00	
94	13.000	20.00	4.900	47.00	35.00	38.00	18.94	37.00	2000.00	53.00	35.00	
95	13.000	20.00	4.900	47.00	35.00	38.00	19.00	37.00	2000.00	53.00	35.00	
96	13.000	20.00	4.900	47.00	35.00	38.00	19.00	37.00	2000.00	53.00	35.00	
97	13.000	20.00	4.900	47.97	35.00	39.00	19.00	37.00	2000.00	53.00	35.00	
98	13.200	20.00	4.900	48.00	35.00	39.00	19.00	38.00	2000.00	53.00	35.00	
99	13.200	20.00	4.900	48.00	35.00	39.00	19.00	38.00	2000.00	53.00	35.00	

a. Age = Under-17, Gender = Girls

SP – Speed, AG – Agility, SB - Static balance, DB - Dynamic balance, MT - Movement time, FLX – Flexibility, AF - Ankle flexibility, AS - Abdominal strength, ERN – Endurance, EXP1 - Explosive power 1, RT - Reaction time

#### **4.7 Discussion of Findings**

Significant differences were found among different age groups, different school groups and gender groups on almost all of the thirteen selected Physical fitness variables. Prominent factors were extracted after Principal component analysis among the different age and gender groups irrespective of the type of school. Prominent items having loadings greater than 0.80 were identified after Principal component analysis among the different age and gender groups irrespective of the type of school and were used for the construction of norms.

Evidences indicate that fitness levels during childhood are declining worldwide. Besides, overwhelming evidences do demonstrate that higher or improved fitness, including measures of body composition, cardio-respiratory function and musculo-skeletal fitness is associated with improved health in children and youth. This might be due to the fact that, gender and age related differences reflect complex and inter connected effects of genetics, anatomy, physiology, behaviour, social and physical environments.

The global temporal trend data demonstrate a worldwide decrease in paediatric aerobic fitness, that cannot be explained solely by lack of physical activity along with fatter and weaker body structure than earlier as has been demonstrated by significant deterioration, particularly in muscular strength and flexibility, besides, an increase in skinfold thickness. Researchers predict that, a population having a declining trend in fitness, may result in accelerated non-communicable disease development, increased health care costs and loss of future productivity.

Another factor which might have been the root cause of significant difference in various dimensions of Physical fitness in relation to posture might be due to the fact that, the actual chronological age range of children and adolescents within each stage of sexual maturation is for a given skeletal age and is quite wide spread. Further, some classification of children and adolescents in relation to their biological development might have occurred. Further, another reason might be that, the muscular

fitness development might have taken place mainly during early or middle adolescent period and might not have been much in later adolescence.

Promotion of Physical fitness during childhood and adolescence and the understanding of different aspects of Physical fitness state the need for better and apt Physical Education programmes at school level. Another factor which might have resulted in these findings of significant differences in much of the dimensions of Physical fitness in relation to posture among the selected groups might be due to the fact that, with repeated activity, the subjects are inclined to underreport physical activity. The effect has been found to be more apparent in the weekend days during which no structured activities takes place, which can be recalled by the children, which might have been included in their daily schedule.

Quality Physical Education programmes have shown that, it constitutes much to student's regular participation in physical activity and is seen to increase student participation in moderate to vigorous physical activity. Besides, dedicated and qualified Physical Education teachers not only teach Physical Education classes, but also might have served as physical activity leaders in their schools and might have promoted physical activity both within and beyond the regular school days and hours.

The testing procedures need to be taught to students, so as for them to evaluate their fitness in relation to posture, which will allow the students to determine their individual status while interpreting those collective fitness results, it is important to understand the results which do indicates significant differences in means among age, gender and school specific groups on various selected fitness profiles. These differences reflect the amount of fitness children need, so as to avoid specific health risks. The means of various dimensions of Physical fitness vary by age, gender and school types, because boys and girls do follow different trajectories with regard to growth and development (as well as susceptibility to potential health risks). The differences in means, however make it challenging to interpret results because absolute fitness levels may not corresponds directly with attainment of fitness standards. For example, boys are found to have higher fitness levels than girls at all ages.

No association was found among different Postural deformities and various groups duly formulated for this study such as age, gender and type of school, and at the same time association was found between Lordosis and Round shoulder to different type of schools irrespective of age and gender.

Posture being an index of health and for good general health all habits should be checked with all possible steps taken to correct faulty influences. Thereafter only posture training and posture exercises should be given to achieve the best result, since the school curriculum do not have such programs, there will be any chances of occurrence of Postural deformities among school children. Postural divergences will inhibit or prevent a child from participating successfully in motor activities and has often been said that balanced posture enables one to have graceful and efficient movement.

Posture do have relation with mental and physical health and is often considered as an index of personality. In order to have good health correct posture should be taught early as one of the essentials of health. Good posture is always considered as an expression of intelligence, character, index of physical efficiency, attitude of readiness, self confidence and assurance which certainly gives better appearance, better advantage and expression of attentiveness.

Posture as a position which have multisegmented organism of the human body and any emotional reactions of an overly sensitive natured individual turn to abnormal posture. Hence, for good posture, good coordination is needed to avoid tension in muscle groups. An individual's habitual posture reflects the general health and state of mind and a happy person tends to be erect and extended while an ill or depressed person tends to slump and lanky.

Proper training of body is a must so as for the best possible state of health. Self-consciousness, fatigue and other psychological states do reflect on posture. Apart from that, Postural defects and environmental factors leaves bad effect on posture, which result in fatigue, infection, discouragement and physical defects. Bad posture with its poor mechanics is always accompanied by lack of muscle tone, fatigue and lessened available mechanical energy. Bad posture causes a cramped position of the

heart, lungs and abdominal organs. Circulation of the blood will be impeded and the organs farthest from heart fail to receive adequate oxygen. Apart from that, undue stretching of some muscle is bad posture and causes muscles and nerve fatigue.

The findings of this study are in consensus with the findings of Kumar (2018), Ramalingam et. al. (2017), Batistao et.al. (2016), Verma et.al. (2016), Said et.al., (2015), Quka et.al. (2015), Babanj et.al. (2012), Eivazi and Alilou (2012) and Griegel (1992).

#### **4.8 Discussion of Hypotheses**

1. Significant mean differences were found among boys and girls irrespective of age and type of school on Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time. At the same time, no significant mean difference was found on Coordination among boys and girls. Thus, hypothesis no. one is partially rejected.
2. Significant mean differences and at the same time no significant mean difference were found on the selected thirteen Physical fitness variables among the four selected Age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years irrespective of the type of School and Gender. Hence, the hypothesis no. two thus formulated is partially rejected.
3. Cross sectional analysis shows significant mean differences and at the same time no significant mean difference were found on the selected thirteen Physical fitness variables among the three type of schools such as Government, Aided and Private irrespective of the Age and Gender. Hence, the hypothesis no. three thus formulated is partially rejected.
4. No association was found between the selected eight Postural deformities such as Scoliosis, Kyphosis, Lordosis, Round shoulder, Bow leg, Knock knees, Claw foot and Flat foot and the four age groups such as Under 14 years, Under



15 years, Under 16 years and Under 17 years irrespective of the Gender and type of school and hence hypothesis no. four is accepted.

5. No association was found between the selected eight Postural deformities such as Scoliosis, Kyphosis, Lordosis, Round shoulder, Bow leg, Knock Knees, Claw foot and Flat foot to boys and girls irrespective of the Age and type of school and hence hypothesis no. five is accepted.
6. No association was found between six of the selected eight Postural deformities such as Scoliosis, Kyphosis, Bow leg, Knock Knees, Claw foot and Flat foot and types of school irrespective of the Age and Gender and hence hypothesis no. six is partially accepted.
7. Association was found between two of the selected eight Postural deformities such as Lordosis and Round shoulder and the three types of school such as Government, Aided and Private irrespective of the Age and Gender and hence hypothesis no. six is partially rejected.
8. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 14 year boys irrespective of the type of School and hence hypothesis no seven is rejected.
9. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 14 year girls irrespective of the type of School and hence hypothesis no eight is rejected.
10. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 15 year boys irrespective of the type of School and hence hypothesis no nine is rejected.
11. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 15 year girls irrespective of the type of School and hence hypothesis no ten is rejected.

12. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 16 year boys irrespective of the type of School and hence hypothesis no eleven is rejected.
13. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 16 year girls irrespective of the type of School and hence hypothesis no twelve is rejected.
14. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 17 year boys irrespective of the type of School and hence hypothesis no thirteen eleven is rejected.
15. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among Under 17 year girls irrespective of the type of School and hence hypothesis no fourteen is rejected.
16. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among boys irrespective of Age and type of School and hence hypothesis no fifteen is rejected.
17. Prominent factors related to selected Physical fitness variables were extracted after principal component analysis from among girls irrespective of Age and type of School and hence hypothesis no sixteen is rejected.
18. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 14 year boys, irrespective of the type of School and hence hypothesis no. seventeen is rejected.
19. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 14 year girls, irrespective of the type of School and hence hypothesis no. eighteen is rejected..

20. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 15 year boys, irrespective of the type of School and hence hypothesis no. nineteen is rejected.
21. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 15 year girls, irrespective of the type of School and hence hypothesis no. twenty is rejected..
22. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year boys, irrespective of the type of School and hence hypothesis no. Twenty one is rejected.
23. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year girls, irrespective of the type of School and hence hypothesis no. twenty two is rejected.
24. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year boys, irrespective of the type of School and hence hypothesis no. Twenty one is rejected.
25. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 16 year girls, irrespective of the type of School and hence hypothesis no. twenty two is rejected.
26. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 17

year boys, irrespective of the type of School and hence hypothesis no. Twenty three is rejected.

27. Prominent items were extracted with loadings greater than or equal to  $\pm 0.80$  of varimax solution, so as to construct norms on Physical fitness for Under 17 year girls, irrespective of the type of School and hence hypothesis no. twenty four is rejected.

# Chapter V

## **Summary and Conclusions**

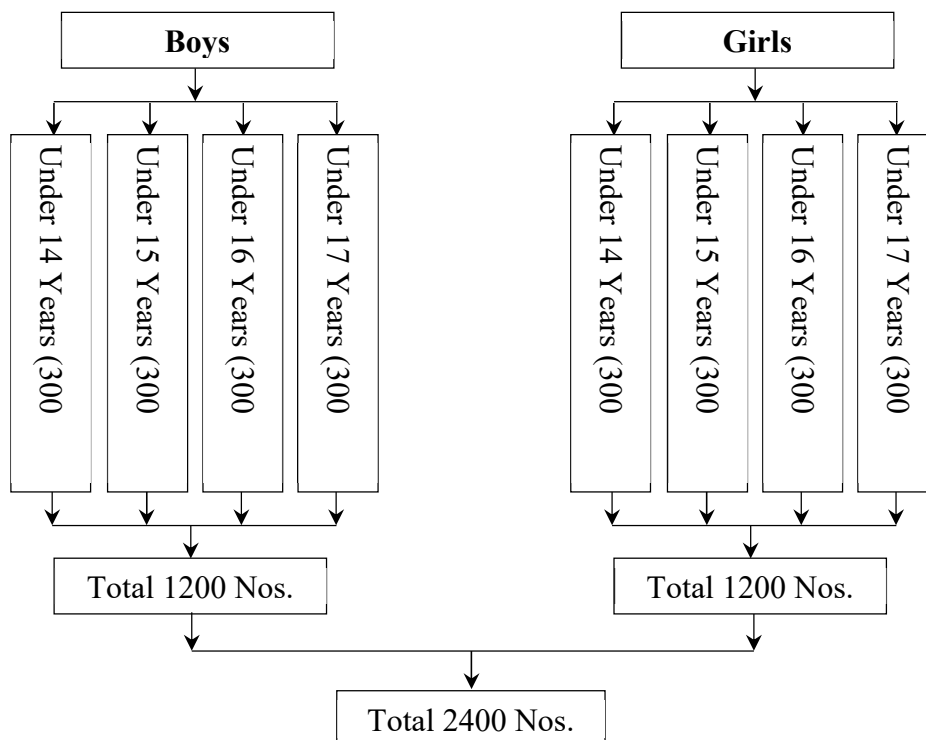
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## 5.1 Summary

The purpose of study was to analyze selected Physical fitness variables in relation to Postural deformities of boys and girls of high schools and higher secondary schools of Nilgiri district. The sub problem of the study was to construct norms on selected Physical fitness variables for boys and girls of high schools and higher secondary schools of Nilgiri district.

The subjects were 1200 boys and 1200 girls of High schools and Higher secondary schools of Government, Aided and Private schools of Nilgiri district. For this study the subjects were categorized as boys and girls Under 14 years, Under 15 years, Under 16 years and Under 17 years. The details of subjects selected for the study were six hundred boys and six hundred girls from twelve Government schools, four hundred boys and four hundred girls from eight Aided schools and two hundred boys and two hundred girls from five Private schools, thereby making the total to 2400 subjects. The split up of the number of subjects gender wise and age wise are as follows :-



The selected Postural deformities, the tests used and its criterion measures used in this study are as detailed below :-

Sl. No.	Variables	Test	Criterion Measures
1.	Scoliosis	New York state posture test	Degree
2.	Kyphosis	New York state posture test	Degree
3.	Lordosis	New York state posture test	Degree
4.	Round shoulder	New York state posture test	Degree
5.	Bow leg	New York state posture test	Degree
6.	Knock knees	New York state posture test	Degree
7.	Claw foot	Foot print test	Degree
8.	Flat foot	Foot print test	Degree

The selected Physical fitness variables, the tests used and its criterion measures are as follows :-

Sl. No.	Variable	Test	Criterion Measures
1.	Speed	50 mts. Dash (Flying start)	1/100 <sup>th</sup> of a second
2.	Agility	4x10 mts. Shuttle run	1/100 <sup>th</sup> of a second
3.	Static balance	Stork stand test	1/100 <sup>th</sup> of a second
4.	Dynamic balance	Johnson's modified bass test	Numbers
5.	Movement time	Nelson's hand and arm reaction test	1/100 <sup>th</sup> of a second.
6.	Flexibility (Trunk & Back)	Sit and Reach Test	Centimeters.
7.	Angle flexibility	Goniometer	Degrees
8.	Abdominal strength	Sit-ups in one minute	Numbers
9.	Coordination	8 figure Duck test	1/100 <sup>th</sup> of a second
10.	Endurance	Cooper's 8-minute run	Meters
11.	Explosive power I	Vertical jump test	Centimeters
12.	Explosive power II	Standing broad jump	Centimeters
13.	Reaction time	Nelson's hand reaction test	1/100 <sup>th</sup> of a second.

Various descriptive profiles like mean, median, mode, standard deviation, variance, skewness, kurtosis, standard error of skewness, standard error of kurtosis, range, minimum score, maximum score, 25<sup>th</sup> percentile, 50<sup>th</sup> percentile and 75<sup>th</sup> percentile of boys and girls of the four age groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls was statistically analysed separately on the selected thirteen Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time.

Data collected from the various groups were statistically examined for significant difference in means by applying two way analysis of variance (two way ANOVA) to compare all the thirteen different selected Physical fitness namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time across the four age groups and the three types of school.

Later the Tukey HSD post-hoc test was done on those variables in which F-ratio's will be significant, in order to verify whether the difference really exist or not for which the level of significance was set at 0.05.

T-ratio was used to compare all the thirteen different selected physical fitness namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1, Explosive power 2 and Reaction time across gender.

Chi square were done to find out the association of Postural deformities to different selected groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls.



Factor analysis (principal component analysis) were done to find out prominent factors comprising of anyone or all of the selected Physical fitness variables among selected eight groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls separately. The unloaded factors obtained were then rotated by varimax method to find the final solution.

Percentile norms were constructed on those prominent Physical fitness variables extracted after Factor analysis ( only on those items with loading greater than or equal to  $\pm 0.80$  of varimax solution ) for eight different groups such as Under 14 year boys, Under 14 year girls, Under 15 year boys, Under 15 year girls, Under 16 year boys, Under 16 year girls, Under 17 year boys and Under 17 year girls.

The level of significance was set at 0.05.

## 5.2 Conclusions

1. Boys are having better Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time than girls irrespective of the age and type of school.
2. Girls are having better Ankle flexibility than boys irrespective of the age and type of school.
3. No difference was found among boys and girls on Coordination irrespective of the age and type of school.
4. Significant difference were found among Under 14 years and Under 15 years on ten Physical fitness variables such as Speed, Agility, Static balance, Movement time, Flexibility, Abdominal strength, Coordination, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.

5. No difference were found among Under 14 years and Under 15 years on three Physical fitness variables such as Dynamic balance, Ankle flexibility and Endurance irrespective of gender and type of school.
6. Significant difference were found among Under 14 years and Under 16 years on eleven Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.
7. No difference were found among Under 14 years and Under 16 years on two Physical fitness variables such as Coordination and Endurance irrespective of gender and type of school.
8. Significant difference were found among Under 14 years and Under 17 years on twelve Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.
9. No difference was found among Under 14 years and Under 17 years on Coordination irrespective of gender and type of school.
10. Significant difference were found among Under 15 years and Under 16 years on eleven Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Coordination, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.
11. No difference were found among Under 15 years and Under 16 years on two Physical fitness variables such as Abdominal strength and Endurance irrespective of gender and type of school.
12. Significant difference were found among Under 15 years and Under 17 years on thirteen Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal

- strength, Coordination, Endurance, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.
13. Significant difference were found among Under 16 years and Under 17 years on twelve Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Abdominal strength, Coordination, Endurance, Explosive power 1, Explosive power 2 and Reaction time irrespective of gender and type of school.
  14. No difference was found among Under 16 years and Under 17 years on Ankle Flexibility irrespective of gender and type of school.
  15. Under 17 years were found to have the better Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Explosive power 1, Explosive power 2 and Reaction time than Under 15 years, Under 16 years and Under 17 years irrespective of gender and type of school.
  16. Under 14 years were found to have the lowest on eleven Physical fitness variables such as Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 2 and Reaction time than Under 15 years, Under 16 years and Under 17 years irrespective of gender and type of school.
  17. Under 15 years were found to have the lowest on two Physical fitness variables such as Coordination, and Explosive power 1 than Under 14 years, Under 16 years and Under 17 years irrespective of gender and type of school.
  18. Significant difference were found among children of Aided schools and Government schools on ten Physical fitness variables such as Speed, Static balance, Dynamic balance, Movement time, Flexibility, Abdominal strength, Coordination, Explosive power 1, Explosive power 2 and Reaction time irrespective of age and gender.

19. No difference were found among children of Aided schools and Government schools on three Physical fitness variables such as Agility, Ankle flexibility, and Endurance irrespective of age and gender.
20. Significant difference were found among children of Aided schools and Private schools on ten Physical fitness variables such as Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Explosive power 1, Explosive power 2 and Reaction time irrespective of age and gender.
21. No difference were found among children of Aided schools and Private schools on three Physical fitness variables such as Speed, Agility and Endurance irrespective of age and gender.
22. Significant difference were found among children of Government schools and Private schools on ten Physical fitness variables such as Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Explosive power 1, Explosive power 2 and Reaction time irrespective of age and gender.
23. No difference were found among children of Government schools and Private schools on three Physical fitness variables such as Speed, Agility and Endurance irrespective of age and gender.
24. Children of Aided schools were found to have the lowest on eight Physical fitness variables such as Speed, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength and Reaction time than children of Government schools and Private schools irrespective of age and gender.
25. Children of Government schools were found to have the lowest on three Physical fitness variables such as Coordination, Explosive power 1 and Explosive power 2 than children of Aided schools and Private schools irrespective of age and gender.

26. No difference were found among children of Government, Aided and Private schools on two Physical fitness variables such as Agility, and Endurance irrespective of age and gender.
27. No association was found between the selected eight Postural deformities such as Scoliosis, Kyphosis, Lordosis, Round shoulder, Bow leg, Knock Knees, Claw foot and Flat foot and the four age groups such as Under 14 years, Under 15 years, Under 16 years and Under 17 years irrespective of the Gender and type of school.
28. No association was found between the selected eight Postural deformities such as Scoliosis, Kyphosis, Lordosis, Round shoulder, Bow leg, Knock Knees, Claw foot and Flat foot and gender such as Boys and girls irrespective of the Age and type of school.
29. No association was found between six of the selected eight Postural deformities such as Scoliosis, Kyphosis, Bow leg, Knock Knees, Claw foot and Flat foot and the three types of school such as Government, Aided and Private irrespective of the Age and Gender.
30. Association was found between two of the selected eight Postural deformities such as Lordosis and Round shoulder and the three types of school such as Government, Aided and Private irrespective of the Age and Gender.
31. The Abstro-Flexibility factor characterized by seven Physical fitness variables namely Dynamic balance, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Explosive power 1 and Explosive power 2 was found as the first most prominent factor accounting for 45.043% of the total common variance accounted by all the two factors among Under 14 year boys.
32. The Reaction time factor characterized by six Physical fitness variables namely Speed, Agility, Static balance, Movement time, Endurance and Reaction time was found as the second most prominent factor accounting for 36.899% of the total common variance accounted by all the two factors among Under 14 year boys.

33. The Balanco-Power factor characterized by eleven Physical fitness variables namely Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time. was found as the first most prominent factor accounting for 66.274% of the total common variance accounted by all the three factors among Under 14 year girls.
34. The Coordination factor characterized by a single Physical fitness variable namely Coordination was found as the second most prominent factor accounting for 11.63% of the total common variance accounted by all the three factors among Under 14 year girls.
35. The Speed factor characterized by a single Physical fitness variable namely Speed was found as the third most prominent factor accounting for 8.862% of the total common variance accounted by all the three factors among Under 14 year girls.
36. The Agile factor characterized by nine Physical fitness variables namely Speed, Agility, Static balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive power 1, and Reaction time was found as the first most prominent factor accounting for 50.01% of the total common variance accounted by all the two factors among Under 15 year boys.
37. The Endurance factor characterized by four Physical fitness variables namely Movement time, Coordination, Endurance and Explosive power 2. was found as the second most prominent factor accounting for 33.637% of the total common variance accounted by all the two factors among Under 15 year boys.
38. The Movement-Abstro factor characterized by eleven Physical fitness variables namely Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 1 and Reaction time was found as the first most prominent factor accounting for 66.274% of the total common variance accounted by all the two factors among Under 15 year girls.

39. The Static balance factor was characterized by a single variable Static balance which was found as the second most prominent factor accounting for 11.634% of the total common variance accounted by all the two factors among Under 15 year girls.
40. The Dynamic-Abstro factor characterized by eleven Physical fitness variables namely Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive power 2 and Reaction time was found as the first most prominent factor accounting for 66.040% of the total common variance accounted by all the two factors among Under 16 year boys.
41. The Speedo-Power factor characterized by two Physical fitness variables namely Speed and Explosive power 1 was found as the second most prominent factor accounting for 19.981% of the total common variance accounted by all the two factors among Under 16 year boys.
42. The Abstro factor characterized by eleven Physical fitness variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1 and Reaction time was found as the first most prominent factor accounting for 65.611% of the total common variance accounted by all the two factors among Under 16 year girls.
43. The Coordination-Power factor characterized by two Physical fitness variables namely Coordination and Explosive power 2 was found as the second most prominent factor accounting for 25.888% of the total common variance accounted by all the two factors among Under 16 year girls.
44. The Abstro 17B factor characterized by ten Physical fitness variables namely Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive power 1, Explosive power 2 and Reaction time was found as the first most prominent factor accounting for 70.400% of the total common variance accounted by all the three factors among Under 17 year boys.

45. The Static balance 17B factor characterized by two Physical fitness variable namely Static balance and Coordination were found as the second most prominent factor accounting for 11.477% of the total common variance accounted by all the three factors among Under 17 year boys.
46. The Endurance 17B factor characterized by a single Physical fitness variable namely Endurance was found as the third most prominent factor accounting for 8.883% of the total common variance accounted by all the three factors among Under 17 year boys.
47. The Abstro 17G factor characterized by twelve Physical fitness variables namely Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive power 1, Explosive power 2 and Reaction time was found as the first most prominent factor accounting for 77.689% of the total common variance accounted by all the two factors among Under 17 year girls.
48. The Coordination 17G factor characterized by a single Physical fitness variable namely Coordination was found as the second most prominent factor accounting for 11.573% of the total common variance accounted by all the two factors among Under 17 year girls.
49. The Abstro boys factor characterized by seven Physical fitness variables namely Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength and Reaction time was found as the first most prominent factor accounting for 58.816% of the total common variance accounted by all the three factors among Boys irrespective of Age and type of school.
50. The Power boys factor characterized by four Physical fitness variable namely Speed, Agility, Static balance, Endurance and Explosive power 2 were found as the second most prominent factor accounting for 12.959% of the total common variance accounted by all the three factors among Boys irrespective of Age and type of school.



51. The Explosive power factor characterized by two Physical fitness variables namely Coordination and Explosive power 1 were found as the third most prominent factor accounting for 10.585% of the total common variance accounted by all the three factors among Boys irrespective of Age and type of school.
52. The Flexibility factor characterized by six Physical fitness variables namely Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength and Reaction time was found as the first most prominent factor accounting for 41.702% of the total common variance accounted by all the three factors among Girls irrespective of Age and type of school.
53. The G-Agile factor characterized by three Physical fitness variable namely Agility, Static balance and Explosive power 2 were found as the second most prominent factor accounting for 17.967% of the total common variance accounted by all the three factors among Girls irrespective of Age and type of school.
54. The G-Coordination factor characterized by three Physical fitness variables namely Coordination, Endurance and Explosive power 1 were found as the third most prominent factor accounting for 14.046% of the total common variance accounted by all the three factors among Girls irrespective of Age and type of school.
55. Dynamic balance, Flexibility, Ankle flexibility, Abdominal strength, Coordination and Explosive Power 1 were the five identified prominent items on which Physical fitness percentile norms were constructed for the Under 14 year boys irrespective of the type of school.
56. Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power 1, Explosive power 2 and Reaction time were the eight identified prominent items on which Physical fitness percentile norms were constructed for the Under 14 year girls irrespective of the type of school.

57. Speed, Agility, Static Balance and Explosive power 1 were the four identified prominent items on which Physical fitness percentile norms were constructed for the Under 15 year boys irrespective of the type of school.
58. Speed, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance, Explosive Power 1 and Reaction time were the ten identified prominent items on which Physical fitness percentile norms were constructed for the Under 15 year girls irrespective of the type of school.
59. Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Coordination, Endurance and Reaction time were the nine identified prominent items on which Physical fitness percentile norms were constructed for the Under 16 year boys irrespective of the type of school.
60. Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive Power 1 and Reaction time were the ten identified prominent items on which Physical fitness percentile norms were constructed for the Under 16 year girls irrespective of the type of school.
61. Speed, Agility, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Explosive Power 1, Explosive Power 2 and Reaction time were the ten identified prominent items on which Physical fitness percentile norms were constructed for the Under 17 year boys irrespective of the type of school.
62. Speed, Agility, Static balance, Dynamic balance, Movement time, Flexibility, Ankle flexibility, Abdominal strength, Endurance, Explosive Power 1 and Reaction time were the eleven identified prominent items on which Physical fitness percentile norms were constructed for the Under 17 year girls irrespective of the type of school.

# Chapter VI

## **Recommendations**

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## **6.1 Recommendations**

On the basis of results of the study and conclusions drawn. The following recommendations are made:-

1. Physical Education and physical fitness should be given more importance in school and that the students of all ages should be encouraged to take part in sports, games and physical activities from their school days onwards, respecting the principle of co- education.
2. The department of sports, department of education and department of health should make sufficient Programme of awareness rating and information campaigning on the necessity of participating in sports, games and intelligent in physical activities among the pre-adolescent and adolescent school going children.
3. Support for children participation in sports, games and physical activities at all ages, by providing sufficient safe infrastructure facilities and equipment.
4. More studies may be conducted including the age groups which are not included in this study.
5. Attempts should be made to educate all classes of students the importance of involvement in Physical Education and sports in life, so as to lead a healthy living devoid of Postural Deformities.
6. More geographical areas may be included for further studies on Postural Deformities of school children, other than the district selected for this study.

7. Parents, teachers and the general public may be made aware of the ill effects of not making their wards involve in sports, games and physical activities, thereby reducing the risk of Postural Deformities.

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# **Appendices**

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## **Environmental Impact of Ecotourism & Nature Tourism**

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### **ABSTRACT**

The quality of the environment, both natural and man-made, is essential to tourism. However, the relationship of tourism with the environment is complex. It involves many activities that can have adverse environmental effects. Many of these impacts are linked with the construction of general infrastructure such as roads and airports, and of tourism facilities, including resorts, hotels, restaurants, shops, golf courses and marinas. The negative impacts of tourism development can gradually destroy environmental resources on which it depends.

On the other hand, tourism has the potential to create beneficial effects on the environment by contributing to environmental protection and conservation. It is a way to raise awareness of environmental values and it can serve as a tool to finance protection of natural areas and increase their economic importance.

In this paper, we describe that the effects of tourism on natural resources, environmental pollution and physical environment. In addition, we explain environmental impacts of tourism on global scale, industrial impacts on tourism and, finally, how tourism can contribute to environmental conservation.

### **INTRODUCTION**

Tourism especially, marine and coastal tourism is one the fastest growing areas within the world's Largest industry. Yet despite increased awareness of the economic and environment significance of tourism, it is only in recent years, scientific researchers have emerged (Hall, 2001).

This paper provides a review of some tourism literature, which focuses, in particular on environmental impacts of tourism.

Negative impacts from tourism occur when the level of visitor use is greater than the environment's ability to cope with this use within acceptable limits of change. Uncontrolled conventional tourism poses potential threats to many natural areas around the world. It can put enormous pressure on an area and lead to impacts such as soil erosion, increased pollution, discharges into the sea, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. It often puts as train on water resources, and it can force local populations to compete for the use of critical resources.



**PUBLICATION CERTIFICATE**

**This publication certificate has been issued to**

**SARIUL VARGHESE, M.P.Ed.M.Phil**

**For publication of research paper titled**

**Environmental Impact of Ecotourism & Nature Tourism**

**Published in *Purakala* with ISSN 0971-2143**

**Vol. 31 Issue 52 Month June Year 2020**

**Impact Factor 5.60**

**The journal is indexed, peer reviewed and listed in UGC Care.**

*Dh Tewari*

**Editor**

**Note:**This eCertificate is valid with published papers and the paper must be available online at  
<https://www.purakala.com/index.php/0971-2143>



**“Physical Education Makes You Fit and Healthy’, Physical Education's Contribution To Young People's Physical Activity Levels”**

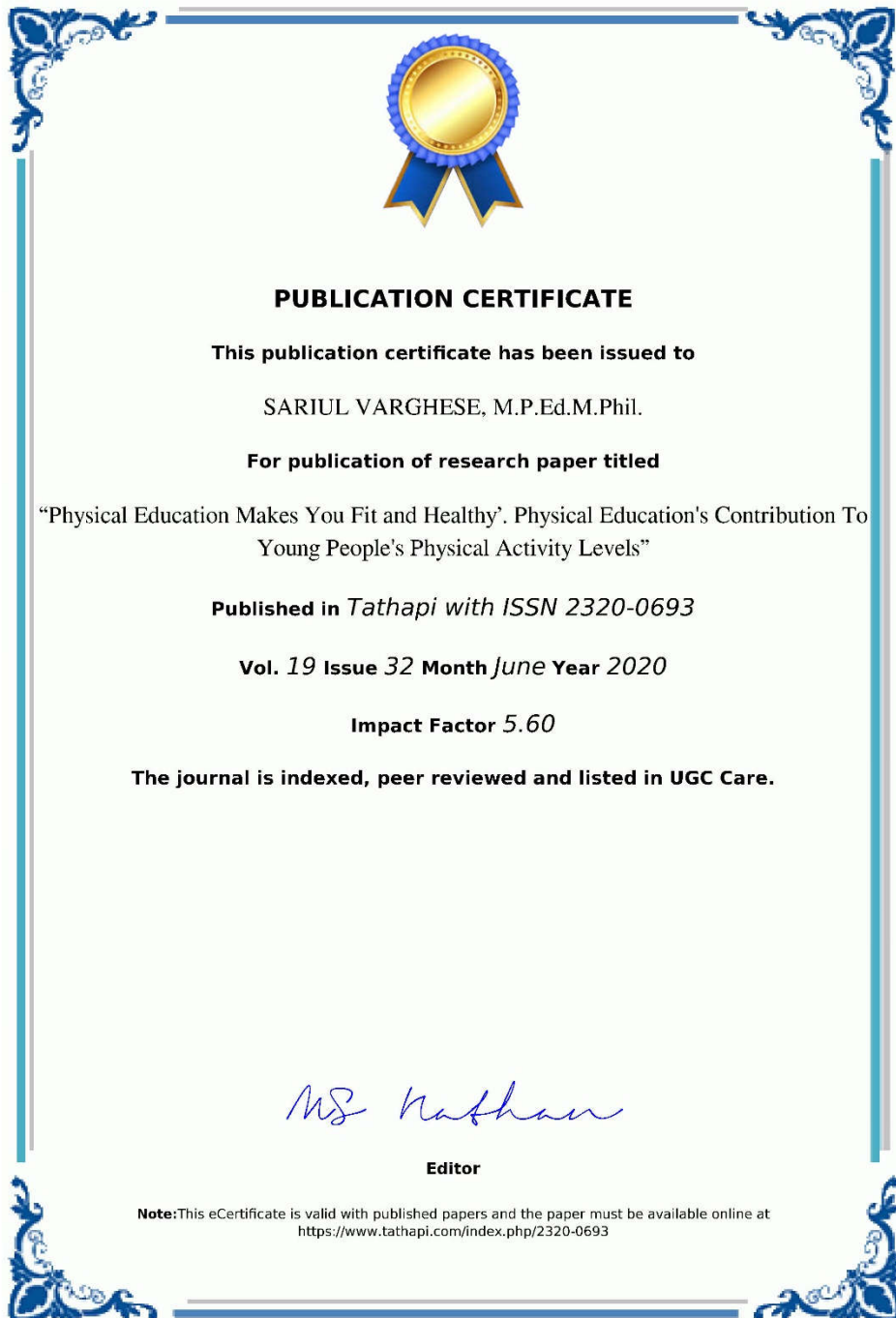
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**ABSTRACT**

The purpose of this study was to assess physical activity levels during high school physical education lessons. The data were considered in relation to recommended levels of physical activity to ascertain whether or not physical education can be effective in helping young people meet health-related goals. Sixty-two boys and 60 girls (aged 11–14 years) wore heart rate telemeters during physical education lessons. Percentages of lesson time spent in moderate-and-vigorous (MVPA) and vigorous intensity physical activity (VPA) were recorded for each student. Students engaged in MVPA and VPA for  $34.3 \pm 21.8$  and  $8.3 \pm 11.1\%$  of lesson time, respectively. This equated to  $17.5 \pm 12.9$  (MVPA) and  $3.9 \pm 5.3$  (VPA) min. Boys participated in MVPA for  $39.4 \pm 19.1\%$  of lesson time compared to the girls ( $29.1 \pm 23.4\%$ ;  $P < 0.01$ ). High-ability students were more active than the average- and low-ability students. Students participated in most MVPA during team games ( $43.2 \pm 19.5\%$ ;  $P < 0.01$ ), while the least MVPA was observed during movement activities ( $22.2 \pm 20.0\%$ ). Physical education may make a more significant contribution to young people's regular physical activity participation if lessons are planned and delivered with MVPA goals in mind.

**INTRODUCTION**

Regular physical activity participation throughout childhood provides immediate health benefits, by positively effecting body composition and musculo-skeletal development (Malina and Bouchard, 1991), and reducing the presence of coronary heart disease risk factors (Gutin *et al.*, 1994). In recognition of these health benefits, physical activity guidelines for children and youth have been developed by the Health Education Authority [now Health Development Agency (HDA)] (Biddle *et al.*, 1998). The primary recommendation advocates the accumulation of 1 hour's physical activity per day of at least moderate intensity (i.e. the equivalent of brisk walking), through lifestyle, recreational and structured activity forms. A secondary recommendation is that children take part in activities that help develop and maintain musculo-skeletal health, on at least two occasions per week (Biddle *et al.*, 1998). This target may be



**PUBLICATION CERTIFICATE**

**This publication certificate has been issued to**

SARIUL VARGHESE, M.P.Ed.M.Phil.

**For publication of research paper titled**

“Physical Education Makes You Fit and Healthy’. Physical Education's Contribution To Young People's Physical Activity Levels”

**Published in *Tathapi* with ISSN 2320-0693**

**Vol. 19 Issue 32 Month June Year 2020**

**Impact Factor 5.60**

**The journal is indexed, peer reviewed and listed in UGC Care.**

*MS Nathan*

**Editor**

**Note:** This eCertificate is valid with published papers and the paper must be available online at <https://www.tathapi.com/index.php/2320-0693>



**ASSESSMENT OF POSTURAL DEFORMITIES AMONG MALE  
TRIBAL HIGH SCHOOL CHILDREN OF WAYANAD**

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**ABSTRACT**

Posture means position and a multi-segmented organism and as such the human body, cannot be said to have a single posture. Posture is an index of health and where posture improvement seems desirable, consider first the factor, which makes a person feel like standing, walking or a sitting the way he the habitually does.

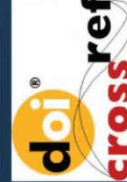
Posture can be "inactive and active". Inactive posture is adopted for resting, sleeping or training general relaxation. In inactive postures, the essential muscular activity required to maintain life is reduced to minimum. Active posture required an integrated action of many muscles to maintain these and may be either "static or dynamic". A static posture is maintained by the interaction of group of muscles which work more or less statically to stabilize the joints, and in opposition to gravity or other forces whereas, a dynamic posture is required to form a efficient basis for movement, and the pattern of posture is constantly modified and adjusted to meet the changing circumstances which arise as a result of movement.

**KEYWORDS:** - POSTURAL DEFORMITIES, SCHOOL CHILDREN, TRIBALS.

**INTRODUCTION**

There is no definite form or shape of any part of body of human and hence, the posture has got many meaning and concepts depending upon the person who is describing this term. There is no single posture good for human bodies as for an orthopaedic surgeon; the posture may be an indication of soundness of skeletal framework and muscular system. To an artist posture may be an expression of personality and emotions. To an actor it is to express his mood. To a sports person posture may be a suitable stance for a good skill, for physical educationalist posture is a measure of muscle balance, mechanical efficiency, and neuromuscular coordination and the kinaesthetic sense. Simply speaking posture is assumed as a mean of coordinative action of muscles, which are working to maintain stability and it is the way in which an individual carries himself/ herself while sitting, standing, walking and lying.

Wayanad is a major pocket of tribal concentration in Kerala and the tribal population according to 1991 census was 1, 14,969 in Wayanad, which was 35.82% of the total tribal population in Kerala state. In this study, 100 tribal girls' students each of Under 14 year girls, under 15 year girls and Under 16 year girls thereby making the total to 300 of nine Government High School of Wayanad district in Kerala were selected as subjects. All the subjects were tested for four Postural Deformities of the Upper body namely Scoliosis, Lordosis, Kyphosis and Round Shoulder. Besides four Postural Deformities of the Lower body such as Knock knees, Bow leg, Claw foot and Flat foot were also tested using



# CERTIFICATE OF PUBLICATION

This is to Certify that the Paper Entitled

**ASSESSMENT OF POSTURAL DEFORMITIES AMONG MALE  
TRIBAL HIGH SCHOOL CHILDREN OF WAYANAD**

Authored by

**SARIUL VARGHESE**

University Grants Commission

Vol. 10 Issue: 07 No. 30 Month: July Year: 2020

Has been published in

**Dogo Rangsang Research Journal**

Impact Factor : 7.12



Dogo Rangsang Research Journal  
ISSN : 2347-7180

UGC Care Group I Journal  
Vol-11 Issue-01 - 2021

**EFFECT OF PLYOMETRIC EXERCISES ON THE EFFECTIVE FITNESS COMPONENTS  
OF FOOTBALL PLAYERS**

**SARIUL VARGHESE**  
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University of Calicut  
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**ABSTRACT:**

**Plyometric** training will allow a player to condense the time their muscles need to apply the maximum amount of force needed to perform a particular movement. A shorter time will translate into greater power with each contraction of the muscle **Plyometric** is a type of exercise training that uses speed and force of different movements to build muscle power. **Plyometric** can include different types of exercises, like pushups, throwing, running, jumping, and kicking. Athletes often use **plyometric** as part of their training, but anyone can **do** these workouts. **Plyometrics** is a type of exercise **training** that uses speed and force of different movements to build muscle power. ... **Plyometrics** can include different types of **exercises**, like pushups, throwing, running, jumping, and kicking. Athletes often use **plyometric** as part of their **training**, but anyone can do these workouts

**Keywords:** Plyometric Effective Fitness Components of Football Players

**INTRODUCTION**

Sport has been a part of civilized societies throughout history. In some cases, as in Greece in the fifth century B.C, sport was of central importance to culture and has been studied and analyzed by scholars on many disciplines over the past 50 years. Most scholars agree that sport is a manifestation of play and that sports are institutionalized forms of play. Sport involves ritual and it involves tradition. The very elaborations of sport, its internal conventions of all kinds, its ceremonies, its endless meshes entangling itself for the purpose of training, testing and rewarding the rousing emotion within an individual to find a moment of freedom. Freedom is that state where energy and order merge and all complexity is purified into a simple coherence of parts and purpose and passions that cannot be surpassed and whose goal could only be to be itself.

**METHODOLOGY**

This chapter deals with the selection of subjects, selection of variables, selection of tests, criterion measures, the experimental design, reliability of data, orientation of the subjects, collection of data, administration of the plyometric exercise programme and the statistical techniques used for analyzing the collected data.

**SELECTION OF SUBJECTS**

For the purpose of this study, 60 male Football players who has played in the Senior state championships from different districts of Kerala were selected as the subjects. The age of the subjects ranged between 17 to 25 years. The subjects were informed about the nature of

**Table 1**  
**THE LIST OF SELECTED PHYSICAL FITNESS  
VARIABLES USED FOR THE STUDY**

Sl. No.	Variable	Test
1.	Speed	50 mts. Dash
2.	Agility	4x10 mts. Shuttle Run
3.	Static Balance	Stork Stand
4.	Dynamic Balance	Johnson's Modified Bass Test
5.	Movement Time	Nelson's Hand and Arm Reaction Test





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**EFFECT OF PLYOMETRIC EXERCISES ON THE EFFECTIVE FITNESS COMPONENTS OF  
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Has been published in

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Impact Factor : **7.12**



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**International Journal of Management Research and Development (IJMRD)**

Volume 12, Issue 3, Sep- Dec 2023, pp. 1-14, Article ID: IJMRD\_12\_03\_001

Available online at:

[https://prjpublication.com/journal/journal.php?name=international\\_journal&master=2&list=7](https://prjpublication.com/journal/journal.php?name=international_journal&master=2&list=7)

ISSN Print: 2248-938X, ISSN Online: 2248-9398

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## CONSTRUCTION & STANDARDISATION OF A KNOWLEDGE TEST ON HEALTH-RELATED PHYSICAL FITNESS FOR SCHOOL CHILDREN OF NILGIRI DISTRICT

**Sariul Varghese**

Director of Physical Education, Nilgiri College of Arts and Science Thaloor,  
The Nilgiris, Tamilnadu, India;

Ph.D. Research scholar. Department of Physical Education,  
University of Calicut, Kerala, India

### ABSTRACT

*The present study was to construct a knowledge test on Health-Related Physical Fitness for School Children of Nilgiri District for which six dimensions were identified namely Concepts of Fitness, Scientific Principles of Exercise, Components of Physical Fitness, Effect of Exercise on Chronic Disease Risk Factors, Exercise Prescription and Others Factors. Since multiple choices questionnaire method was found to be the best, all possible and suitable items pertaining to the different aspects of the six dimensions were written and thus a total of 55 items were identified.*

*The preliminary version of the test blueprint were analyzed and evaluated by three well know experts in the field of Physical Fitness. Based on their feedback, the final blueprint was prepared and the trial run was done on 370 school boys and girls studying from 8<sup>th</sup> to 12<sup>th</sup> grade. Thereafter, item analysis, item difficulty and Item discrimination have been applied on the student's responses to the questionnaire and further effecting necessary modifications, the final version of the test was prepared which consisted of fifty items.*

*The Reliability of the test was ascertained using the Internal Consistency Reliability Co-efficient and the Cronbacha's Co-efficient thus obtained was 0.742 (Cronbacha's Alpha). The validity of the test was the Content Validity and was ascertained by comparison with ratings done by a panel of experts in Physical Fitness.*

**Keywords:** Health Related Physical Fitness, Knowledge Test

**Citation:** Sariul Varghese, Construction & Standardisation of A Knowledge Test on Health-Related Physical Fitness for School Children of Nilgiri District, International Journal of Management Research and Development (IJMRD), 12(3), pp. 1-14, 2023.

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# Priyanka Research Journal (PRJ) Publication

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## International Journal of Management Research and Development (IJMRD)

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Paper ID: IJMRD\_12\_03\_001

Date: 25-Nov-2023

### *Certificate of Publication*

This is to certify that the research paper entitled "CONSTRUCTION & STANDARDISATION OF A KNOWLEDGE TEST ON HEALTH-RELATED PHYSICAL FITNESS FOR SCHOOL CHILDREN OF NILGIRI DISTRICT" Authored by "Sariul Varghese" had been reviewed by the Editorial Board and published in "International Journal of Management Research and Development (IJMRD), Volume 12, Issue 3, Sep-Dec 2023, pp. 1-14; ISSN Print: 2248-938X, ISSN Online: 2248-9398".

**Chief Editor**  
**Priyanka Research Journal (PRJ) Publication**

No:57/2 Dr Muthu Lakshmi Road (LB Road), Adyar, Chennai-600 020, Tamilnadu, India  
E-mail: [prjpublication@gmail.com](mailto:prjpublication@gmail.com), Website: [www.prjpublication.com](http://www.prjpublication.com)

**Factor Structure Of Male And Female Long Jumpers And Triple Jumpers On Selected Anthropometric And Physical Fitness Variables in school children of Nilgiri District****Sariul Varghese**Director Of Physical Education, Nilgiri college of Arts and Science Thaloor. Ph.D.  
Research scholar, Department of physical Education University of Calicut, India**Abstract**

1. The purpose of the study was to find out prominent contributing factors to performances in different jumping events in athletics from the among selected anthropometric and physical fitness variables. The study was delimited to two jumping events in athletics namely, long jump and triple jump. The study was delimited to the male and female athletes of Nilgiri, who have either represented Tamil Nadu state or any of the schools in Tamilnadu states. The study was delimited to the age group of 15 – 18 years. Non-availability of sophisticated instruments to measure the anthropometric and physical fitness variables was considered as a limitation of this study. No motivational technique was used while administering the tests and this was considered as another limitation of this study. The difference that exist among the subject due to varied social, cultural and religious factors cannot be controlled and this might have affected the result of this study, hence this is considered an another limitation of this study. The general mood and environmental factors at the time of performing the various tests by the selected subject's might be different from the actual and might have affected the results of this study and this is considered as another limitation of this study. The results of this study will high light the importance of anthropometric measurements and physical fitness variables to performances in different jumping events in athletics. The study will help coaches athletes and physical education teachers, to identify the prominent factors comprising of anthropometric measurements and physical fitness variables which is to be given more importance, for improving performances in different jumping events in athletics. The result of this study will help the Physical Education teachers to identify athletes for different jumping events in athletics. The results of this study will also help the coaches and Physical Education teachers to prepare specific training programme for different type of jumpers in athletics. The result of this study will help coaches and Physical Education teachers in identifying talent in different jumping events in athletics by highlighting prominent factors comprising of any or all of the selected anthropometric and physical fitness variables.

**INTRODUCTION**

The nature of sports performance has been insufficiently explored because sports performance in a complicated multi-dimensional process of tackling a given sports task. It's further exploration and determination needs an integral effort





(ISSN 2249-9598)  
**Online International Interdisciplinary  
Research Journal**  
(Bi-Monthly)

An International Journal

Editor  
Somnath Kisan Khatal  
E-mail : editoroiirj@gmail.com  
Website : www.oiiirj.org

Date: 25/03/2024

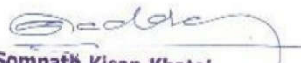
**Publication Certificate**

The **Online International Interdisciplinary Research Journal (OIIRJ)** is an online international, peer reviewed, indexed, open access, interdisciplinary refereed research journal published Bi-Monthly in English medium started in the year Sept- October 2011.

The research Paper submitted for Publication in our **Online International Interdisciplinary Research Journal** which is published Bi-Monthly possessing ISSN 2249-9598. Review team gone thoroughly through this research paper entitled **Factor Structure Of Male And Female Long Jumpers And Tripple Jumpers On Selected Anthropometric And Physical Fitness Variables in school children of Nilgiri District.....Page.No- 74-98** of Sariul Varghese.

Above entitled Research paper has been published in **Volume-14 / Issue- 02 / Mar-Apr 2024** of Online International Interdisciplinary Research Journal.

Thank you

  
Somnath Kisan Khatal  
Editor  
Online International Interdisciplinary  
Research Journal (BI-Monthly)  
ISSN-2249-9598

Dr. Somnath Kisan Khatal  
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ONLINE INTERNATIONAL INTERDISCIPLINARY RESEARCH  
JOURNAL (Bi-monthly) [www.oiiirj.org](http://www.oiiirj.org)



**Reduction Of Biological Age- A New Trend In The Physical Fitness Scenario Among Elderly Adults In Physical Education****Sariul Varghese**Director of physical Education Nilgiri college of Arts and Science Thaloor.Ph.D.  
Research scholar. Department of physical Education, University of Calicut**Abstract**

At present, Improving the quality of life for the elderly is becoming more and more important as the world's population ages. With the help of science, man has developed in every way. Ageing and death cannot be prevented. However, by paying attention to certain things in a proper manner, one can live healthier, longer, and can thereby delay death. The reduction of biological age represents a novel and transformative trend and popular in the fitness scenario among elderly adults. This chapter enriches about targeted lifestyle modifications, encompassing exercise routines, Intermittent fasting, dietary choices, and stress management which positively help to stay fit, thereby contributing to the reduction of biological age. This abstract delves into various strategies employed in contemporary fitness programs aimed at mitigating the effects of aging and fostering a more youthful biological profile among the elderly adults.

**Keywords:** Biological age, Reduction of biological age, Exercise, Diet, Nutrition, Intermittent fasting, Fitness, Elderly adults.

**Introduction**

The process of aging itself is a complex phenomenon that involves cellular damage which accumulates over time. The rates at which these age-related biological processes occur also differ from person to person (Bøstrand et al., 2022). A progressive reduction in physical, mental, and reproductive abilities is a hallmark of aging, which also causes a loss of function, an increase in disease susceptibility, and finally death. Changes in body composition that lead to a loss of muscular mass and a decrease in lean body mass are among the physical impacts of aging. As people get older, their basal metabolic rate (BMR) declines, which is followed by an increase in body fat storage and may also make them less mobile. Age-related declines in bone density lead to lower bone strength and an elevated risk of fracture. Besides, Changes in body composition lead to a loss of muscular mass. In older adults, taste sensitivity decreases with age and increased infection rates are a result of aging immune systems. In older adults, taste sensitivity decreases with age. Increased infection rates are a result of aging immune systems. With time, the gastrointestinal tract's absorptive and digesting functions deteriorate as well (Södergren, 2013). Currently, the world is dealing with a trend of aging populations and rising life expectancy. It is crucial to deepen our understanding of the mechanisms underlying aging and the idea that biological age might be slowed down by enhancing the lives of the old (Jia et al., 2017).

Commonly, health risk categorisation in each and every society mainly depends on chronological age of individual (Heyman et al., 2012). The term chronological age refers to the number of years lived and it is a set notion that is strictly governed by the calendar. (Jia et al., 2017). This is a widely used indicator of

## A comparative study on performance fitness components of korfball and netball players in Kerala

Dr. K P Manoj<sup>1\*</sup>, Mr. Sariulvarghese<sup>2\*\*</sup>

<sup>1</sup>University Director of Physical Education, University of Calicut

<sup>2</sup>Research Scholar, Department of Physical Education, University of Calicut.

\*First Author

\*\*Second Author

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**Abstract:** *This study was an attempt to analyse the degree of performance fitness components among Korfball and Netball boys' players in Kerala. To carry out this study, 40 subjects, 20 from Korfball and 20 from Netball, The age limit for players ranged from 12 to 16 years. The samples were taken from Chungathara, Mannimoolly, and Pariyapuram in the Malappuram district of Kerala. Only explosive power of the legs and agility were used to measure the performance fitness components. To evaluate the significance of differences between the means, a significant t-values'' test was applied. The level of significance was 0.05. On the basis of statistical analysis, the results showed that the variable explosive strength for Korfball players was significantly lower than that of Netball players, and the variable agility for Korfball players was significantly higher than that of Netball players.*

**Keywords:** *Performance fitness components, Korfball, Netball, Kerala.*

---

### I. Introduction

The field of sports is vital for the nation's expansion and progress. Through enhancing infrastructure and fostering a feeling of civic duty in each individual, sports can fortify the country. Each person has a multitude of talents that can be revealed via sports. The younger generation's children can develop their mental, emotional, and physical fortitude. A better society can be achieved through the tremendous role that sports play. Sports have a responsibility to not only improve the planet but also to mould a society that will endure forever. With the development of technology, physical labour has become less necessary for both men and women, which has led to a reduction in their life duration. Previously, women were responsible for gathering food for the homes, and they required a great deal of physical exertion to survive. Maintaining a decent standard of living is crucial.

**பள்ளிச் சின்னம்**

## உடல் திறன் மற்றும் விளையாட்டுத் திறமை அறிக்கை அட்டை

வ. எண்.	இணைந்த உடர் திறன் தேர்வுப் போட்டிகள்	மதிப்பெண் அடிப்படையில் பெறப்பட்ட மதிப்பெண் (✓) குறிப்பிடுக	விளையாட்டுகள்	தரவரிசை / போட்டிகள்	மாதிரி / விவரம்
1.	வேகமாக ஓடும் ஆற்றல் மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி, பந்தம், டென்னிஸ், வாலிபால்	த.கனம், குத்துச் சண்டை, ஸ்குவாஷ், டிஸ்கஸ் தாண்டல்	மாணவன் / மாணவி பெயர் .....
2.	வேகமாக ஓடும் ஆற்றல் மற்றும் உடல் வலிமை	<input type="checkbox"/>	சாம்பந்தி, டென்னிஸ், வாலிபால்	டென்னிஸ், த.கனம்-தடகனம், நீளம் தாண்டல்	வரிசை எண்.....
3.	வேகமாக ஓடும் ஆற்றல் மற்றும் உந்து திறன்	<input type="checkbox"/>	பேசைப்பந்து, கூடைப்பந்து, சால்பந்து, வாலிபால்	தடகனம் - உயரம், நீளம் தாண்டல், ஸ்குவாஷ், வாலிபால்	வகுப்பு / பிரிவு .....
4.	வேகமாக ஓடும் ஆற்றல் மற்றும் கறுவாழ்ப்பு திறன்	<input type="checkbox"/>	சிறகுப்பந்து, கைப்பந்து, பேசைப்பந்து	சிறகுப்பந்து, ஸ்குவாஷ், ஓடுதல், வானப்போர் (பேசைப்பந்து)	பிறந்த தேதி .....
5.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி, டென்னிஸ்	நீச்சல், ப.ட.கே. மும் போட்டி, த.கனம், குத்துச் சண்டை	வயது (சூலை 1 அன்று).....
6.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உந்து திறன்	<input type="checkbox"/>	கூடைப்பந்து, ஹாக்கி	தடகனம்-நீளம் தாண்டல், நீச்சல்	உயரம் (செ.மீ-ல்) .....
7.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் கறுவாழ்ப்பு திறன்	<input type="checkbox"/>	ஹாக்கி, டென்னிஸ், சால்பந்து, கூடைப்பந்து, கிரிக்கெட்	தடகனம்-நீளம் தாண்டல், நீச்சல்	எடை (கி.கி.-மில்).....
8.	உடல் வலிமை மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	பைப்பந்து, டென்னிஸ்	தடகனம்-குண்டு, தட்டு, ஈட்டி எறிதல், டென்னிஸ்	பள்ளியின் பெயர் மற்றும் முகவரி .....
9.	கறுவாழ்ப்பு திறன்	<input type="checkbox"/>	கூடைப்பந்து, கிரிக்கெட்	பருத்தாக்குதல் மலத்தம்	.....
10.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் கறுவாழ்ப்பு திறன்	<input type="checkbox"/>	பைப்பந்து, டென்னிஸ்	ஜிப்ளாஷ், தடகனம்-உயரம், நீளம் தாண்டல்	உயரட்சி ஒன்றியம் மற்றும் மாவட்டத்தின் பெயர் .....

**உங்கள் குழந்தையை ஊக்கப்படுத்துங்கள் வீட்டில் ஒரு விளையாட்டு வீரனாக உருவாக்குங்கள்**

(குறிப்பிட்டு விளையாட்டு மேம்பாட்டு ஆணையத்தால் இப்படிப்பட்ட ஆணையத்தால் தயாரிக்கப்பட்டது)



தமிழ்நாடு விளையாட்டு மேம்பாட்டு ஆணையம் 6-ம் வகுப்பு மாணவர்களுக்கு குறித்த தரம்					
Speed வேகமாக ஒட்டும் ஆற்றல் 50 மீ. ஓட்டம் (நொடியில்)	Endurance அதிகமாக தாக்குப் பிடிக்கும் நிறை 800 மீ. ஓட்டம் (நுமி-ததில்)	Strength உடல் வலிமை (கூண்டு எறிதல்) (மீட்டரில்)	Explosive Power உந்துதிறன் தாண்டுதல் (மீட்டரில்)	Agility (6x10m) ஏழைந்துபுத்தி திறன் 6x10 மீ. ஓட்டம் (நொடியில்)	Marks மதிப்பெண் ஒதுக்கீடு
8.0 நொடி மற்றும் அதற்கு கீழ்	3:17.0 நிமிடம் மற்றும் அதற்கு கீழ்	4.66 மீட்டர் மற்றும் அதற்கு மேல்	3.67 மீட்டர் மற்றும் அதற்கு மேல்	16.5 மீட்டர் மற்றும் அதற்கு கீழ்	10
8.1 முதல் 8.4	3:17.1 முதல் 3:32.0	4.31 முதல் 4.65	3.42 முதல் 3.66	16.6 முதல் 17.1	9
8.5 முதல் 8.8	3:32.1 முதல் 3:47.0	3.96 முதல் 4.30	3.17 முதல் 3.41	17.2 முதல் 17.7	8
8.9 முதல் 9.2	3:47.1 முதல் 4:02.0	3.61 முதல் 3.95	2.92 முதல் 3.16	17.8 முதல் 18.3	7
9.3 முதல் 9.6	4:02.1 முதல் 4:17.0	3.26 முதல் 3.60	2.67 முதல் 2.91	18.4 முதல் 18.9	6
9.7 முதல் 10	4:17.1 முதல் 4:32.0	2.91 முதல் 3.25	2.42 முதல் 2.66	19.0 முதல் 19.5	5
10.1 முதல் 10.4	4:32.1 முதல் 4:47.0	2.56 முதல் 2.90	2.17 முதல் 2.41	19.6 முதல் 20.1	4
10.5 முதல் 10.8	4:47.1 முதல் 5:02.0	2.21 முதல் 2.55	1.92 முதல் 2.16	20.2 முதல் 20.7	3
10.9 முதல் 11.2	5:02.1 முதல் 5:17.0	1.86 முதல் 2.20	1.67 முதல் 1.91	20.8 முதல் 21.3	2
11.3 முதல் 11.6	5:17.1 முதல் 5:32.0	1.51 முதல் 1.85	1.42 முதல் 1.66	21.4 முதல் 21.9	1
11.7 மற்றும் அதற்கு மேல்	5:32.1 மற்றும் அதற்கு மேல்	1.50 மற்றும் அதற்கு கீழ்	1.41 மற்றும் அதற்கு கீழ்	22.00 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	உடல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		பெண்கள்	புள்ளிகள்	பெண்கள்	புள்ளிகள்	பெண்கள்	புள்ளிகள்
1.	வேகமாக ஒட்டும் ஆற்றல் (Speed) 50 மீ. ஓட்டம்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்
2.	அதிகமாக தாக்குப் பிடிக்கும் திறன் (Endurance) 800 மீ. ஓட்டம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்
3.	உடல் வலிமை (Strength) கூண்டு எறிதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
4.	உந்து திறன் (Explosive Power) நீளம் தாண்டுதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
5.	ஏழைந்துபுத்தி திறன் (Agility) 6 x 10 M Run	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்
50-க்கு மேல்தே மதிப்பெண்கள்							
** மொத்தத்தில் தரம்							
தேர்வுகள் நடத்தப்பட்ட நாள்							
		முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
உய்கள்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
குழந்தை		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
உடல்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
தகுதியில்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
முன்னே		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
வேண்டும் (✓)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
உட்கல்லை ஆதிர்வர் / இடக்கூர் கைமொப்பம்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
வகுப்பு ஆதிர்வர் கைமொப்பம்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
அறிக்கை ஆ.உ.உ. வழங்கப்பட்ட நாள்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
பெற்றோர் / பரண்ப்பாளர் கைமொப்பம்		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
குறிப்பு: * தரவு பெற்றுக் கொடுக்கப்பட்டுள்ள ஆட்டவணைய கடைபிடிக்கவும். ** பரணை / பரணைவிடா நெற்ற மதிப்பெண்களின் அடிப்படையில் தரம் நினைப்பெய்யப்பட்டுள்ளது.							

பள்ளிச்  
சின்னம்

## உடல்திறன் மற்றும் விளையாட்டுத் திறமை அறிக்கை அட்டை

மாணவன் / மாணவி பெயர் .....

வரிசை எண்.....

வகுப்பு / பிரிவு .....

பிறந்த தேதி .....

வயது (சூலை 1 அன்று).....

உயரம் (செ.மீ.-ல்) .....

எடை (கி.கி.-வில்).....

பள்ளியின் பெயர் மற்றும் முகவரி .....

.....

உயராட்சி ஒன்றியம்  
மற்றும் மாவட்டத்தின் பெயர் .....

உங்களுக்கு தகுந்த தனிநபர் / குழு விளையாட்டு விவரம் பல்லேறு தனிநபர் / குழு விளையாட்டுக்கான உடறிதிறன் தகுதி

வ. எண்.	இணைந்த உடறிதிறன் தேர்வுப் போட்டிகள்	மதிப்பெண் அடிப்படையில் பெற்ற உரிய கட்டத்தின் (✓) குறிப்பிட வேண்டும்	விளையாட்டுகள்	தனிநபர் / போட்டிகள்
1.	வேலாயுசு ஒட்டி ஆற்றல் மற்றும் அதிகவரக தரக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி கால்பந்து, வாக் பந்தம்	த.கனம், குத்துச் சண்டை, லகாவாஷ், டேன்ஸ் போட்டிகள்
2.	வேலாயுசு ஒட்டி ஆற்றல் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கால்பந்து, டென்னிஸ், வாலிபால்	டென்னிஸ், த.கனம்-ஓட்டம், ஓடுதல், உயரம், நீளம் தரண்டுதல்
3.	வேலாயுசு ஒட்டி ஆற்றல் மற்றும் உடல்திறன்	<input type="checkbox"/>	மேலேயட்டம், கூடைப்பந்து, கால்பந்து, வாலிபால்	த.கனம் - உயரம், நீளம் தரண்டுதல், லகாவாஷ் வாலிபால்
4.	வேலாயுசு ஒட்டி ஆற்றல் மற்றும் ஊதுதிறன்	<input type="checkbox"/>	சிறகுப்பந்து, கைப்பந்து, ஹாக்கி, மேலேயட்டம்	சிறகுப்பந்து, லகாவாஷ், ஓடுதல், வாளியோடு (டென்சிங்)
5.	அதிகவரக தரக்குப் பிடிக்கும் திறன் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி, டென்னிஸ்	நீச்சல், ப.கோட்டும் போட்டி, த.கனம், குத்துச்சண்டை
6.	அதிகவரக தரக்குப் பிடிக்கும் திறன் மற்றும் உடல்திறன்	<input type="checkbox"/>	கூடைப்பந்து, ஹாக்கி	த.கனம்-நீளம் தரண்டுதல், நீச்சல்
7.	அதிகவரக தரக்குப் பிடிக்கும் திறன் மற்றும் ஊதுதிறன்	<input type="checkbox"/>	ஹாக்கி, டென்னிஸ், கால்பந்து, கூடைப்பந்து, கிரிக்கெட்	த.கனம்-நீளம் தரண்டுதல், நீச்சல்
8.	உடல் வலிமை மற்றும் அதிகவரக தரக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கைப்பந்து, டென்னிஸ்	த.கனம்-குண்டு, தட்டு, ஈட்டி, எறிதல், டென்னிஸ்
9.	உடல் வலிமை மற்றும் ஊதுதிறன்	<input type="checkbox"/>	கூடைப்பந்து, கிரிக்கெட்	பருதாக்கூத்தல், மல்பந்தம்
10.	அதிகவரக தரக்குப் பிடிக்கும் திறன் மற்றும் ஊதுதிறன்	<input type="checkbox"/>	கைப்பந்து, டென்னிஸ்	ஜிம்னாஸ்டிக்ஸ், த.கனம்-உயரம், நீளம் தரண்டுதல்

உங்கள் குழந்தையை ஊக்கப்படுத்துங்கள் வீட்டில் ஒரு விளையாட்டு வீரன் உருவாக்குங்கள்

(குழந்தை விளையாட்டு போட்டி ஆணையத்தால் இடம்பூலும் தயாரிக்கப்பட்டது)



தமிழ்நாடு விளையாட்டு மேம்பாட்டு ஆணையம் 7-ம் வகுப்பு மாணவர்களுக்கு குறித்த தரம்					
Speed வேகமாக ஒரு மீட்டர் 50 மீ. ஓட்டம் (நேரடியில்)	Endurance அதிகமாக தாக்குப் பிடிக்கும் திரன் 800 மீ. ஓட்டம் (நேரடியில்)	Strength உடல் வலிமை (குண்டு எறிகள்) (மீட்டரில்)	Explosive Power உந்து திறன் (நேரம் தாண்டுதல்) (மீட்டரில்)	Agility (6x10m) ஈழைப்புத் திரன் 6x10 மீ. ஓட்டம் (நேரடியில்)	Marks மதிப்பெண் ஒதுக்கீடு
7.2 நேரடி மற்றும் அதற்கு கீழ்	3:07.0 நிமிடம் மற்றும் அதற்கு கீழ்	5.00 மீட்டர் மற்றும் அதற்கு மேல்	4.50 மீட்டர் மற்றும் அதற்கு மேல்	15.55 மீட்டர் மற்றும் அதற்கு கீழ்	10
7.3 முதல் 7.6	3:07.1 முதல் 3:22.0	4.65 முதல் 4.99	4.25 முதல் 4.49	15.6 முதல் 16.1	9
7.7 முதல் 8.0	3:22.1 முதல் 3:37.0	4.30 முதல் 4.64	4.00 முதல் 4.24	16.2 முதல் 16.7	8
8.1 முதல் 8.4	3:37.1 முதல் 4:52.0	3.95 முதல் 4.29	3.75 முதல் 3.99	16.8 முதல் 17.3	7
8.5 முதல் 8.8	3:52.1 முதல் 4:07.0	3.60 முதல் 3.94	3.50 முதல் 3.74	17.4 முதல் 17.9	6
8.9 முதல் 9.2	4:07.1 முதல் 4:22.0	3.25 முதல் 3.59	3.25 முதல் 3.49	18.0 முதல் 18.5	5
9.3 முதல் 9.6	4:22.1 முதல் 4:37.0	2.90 முதல் 3.24	3.00 முதல் 3.24	18.6 முதல் 19.1	4
9.7 முதல் 10.0	4:37.1 முதல் 4:52.0	2.55 முதல் 2.89	2.75 முதல் 2.99	19.2 முதல் 19.7	3
10.1 முதல் 10.4	4:52.1 முதல் 5:07.0	2.20 முதல் 2.54	2.50 முதல் 2.74	19.8 முதல் 20.3	2
10.5 முதல் 10.8	5:07.1 முதல் 5:22.0	1.85 முதல் 2.19	2.25 முதல் 2.49	20.4 முதல் 20.9	1
10.9 மற்றும் அதற்கு மேல்	5:22.1 மற்றும் அதற்கு மேல்	1.84 மற்றும் அதற்கு கீழ்	2.24 மற்றும் அதற்கு கீழ்	21.0 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	உடல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		புள்ளி	நெடும்	புள்ளி	நெடும்	புள்ளி	நெடும்
1.	வேகமாக ஒட்டும் ஆற்றல் (Speed) 50 மீ. ஓட்டம்	நெடும்	நெடும்	நெடும்	நெடும்	நெடும்	நெடும்
2.	அதிகமாக தாக்குப் பிடிக்கும் திரன் (Endurance) 800 மீ. ஓட்டம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்
3.	உடல் வலிமை (Strength) குண்டு எறிகள்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
4.	உந்து திறன் (Explosive Power) நீளம் தாண்டுதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
5.	ஈழைப்புத் திறன் (Agility) 6 x 10 M Run	நெடும்	நெடும்	நெடும்	நெடும்	நெடும்	நெடும்
50-க்கு மொத்த மதிப்பெண்கள்							
** பொருத்தத்தில் தரம்							
தேர்வுகள் நடத்தப்பட்ட நாள்							
உங்கள் குழந்தை உடல் தகுதியில் முன்னேற வேண்டும் (✓)	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்		
	வேகமாக ஒட்டும் ஆற்றல்	வேகமாக ஒட்டும் ஆற்றல்	வேகமாக ஒட்டும் ஆற்றல்	வேகமாக ஒட்டும் ஆற்றல்	வேகமாக ஒட்டும் ஆற்றல்	வேகமாக ஒட்டும் ஆற்றல்	
அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	அதிகமாக தாக்குப் பிடிக்கும் திரன்	
உடல் வலிமை	உடல் வலிமை	உடல் வலிமை	உடல் வலிமை	உடல் வலிமை	உடல் வலிமை	உடல் வலிமை	
உந்து திறன்	உந்து திறன்	உந்து திறன்	உந்து திறன்	உந்து திறன்	உந்து திறன்	உந்து திறன்	
ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	ஈழைப்புத் திறன்	
உட்கைவல் ஆசிரியர் / இயக்குநர் கையொப்பம்							
வகுப்பு ஆசிரியர் கையொப்பம்							
அறிக்கை அட்டை வழங்கப்பட்ட நாள்							
பெற்றோர் / பரதஸ்பாணி கையொப்பம்							
குறிப்பு: - தயவு செய்து கண்டுக்கொள்ள ஆட்டவணையை கடைபிடிக்கவும். ** மாணவ / மாணவிக்கு பெற்ற மதிப்பெண்களின் அடிப்படையில் தரம் நிர்ணயம் செய்யப்பட்டுள்ளது.							





தமிழ்நாடு விளையாட்டு மேம்பாட்டு ஆணையம் 8-ம் வகுப்பு மாணவர்களுக்கு குறித்த தரம்					
Speed வேகமாக ஒட்டும் ஆற்றல் 50 மீ. ஒட்டம் (Endurance) (நொடியில்)	Endurance அதிகமாக தாக்குப் பிடிக்கும் திரன் 800 மீ. ஒட்டம் (நிமிடத்தில்)	Strength உடல் வலிமை (கூண்டு எறியல்) (மீட்டர்ஸ்)	Explosive Power உந்து திறன் தாண்டுதல் (மீட்டர்ஸ்)	Agility (6x10m) ஏழாறுபுத்த திரன் 6x10 மீ. ஒட்டம் (நொடியில்)	Marks மதிப்பெண் ஒதுக்கீடு
7.0 நொடி மற்றும் அதற்கு கீழ்	3:05.0 நிமிடம் மற்றும் அதற்கு கீழ்	6.01 மீட்டர் மற்றும் அதற்கு மேல்	4.56 மீட்டர் மற்றும் அதற்கு மேல்	15.2 மீட்டர் மற்றும் அதற்கு கீழ்	10
7.1 முதல் 7.4	3:05.1 முதல் 3:20.0	5.44 முதல் 6.00	4.31 முதல் 4.55	15.3 முதல் 15.8	9
7.5 முதல் 7.8	3:20.1 முதல் 3:35.0	4.87 முதல் 5.43	4.04 முதல் 4.30	15.9 முதல் 16.4	8
7.9 முதல் 8.2	3:35.1 முதல் 3:50.0	4.31 முதல் 4.86	3.81 முதல் 4.05	16.5 முதல் 17.0	7
8.3 முதல் 8.6	3:50.1 முதல் 4:05.0	3.74 முதல் 4.30	3.56 முதல் 3.80	17.1 முதல் 17.6	6
8.7 முதல் 9.0	4:05.1 முதல் 4:20.0	3.17 முதல் 3.73	3.31 முதல் 3.55	17.7 முதல் 18.2	5
9.1 முதல் 9.4	4:20.1 முதல் 4:35.0	2.91 முதல் 3.16	3.04 முதல் 3.30	18.3 முதல் 18.8	4
9.5 முதல் 9.8	4:35.1 முதல் 4:50.0	2.76 முதல் 2.90	2.81 முதல் 3.03	18.9 முதல் 19.4	3
9.9 முதல் 10.2	4:50.1 முதல் 5:05.0	2.51 முதல் 2.75	2.56 முதல் 2.80	19.5 முதல் 20.0	2
10.3 முதல் 10.6	5:05.1 முதல் 5:20.0	2.26 முதல் 2.50	2.31 முதல் 2.55	20.1 முதல் 20.6	1
10.7 மற்றும் அதற்கு மேல்	5:20.1 மற்றும் அதற்கு மேல்	2.25 மற்றும் அதற்கு மேல்	2.30 மற்றும் அதற்கு மேல்	20.7 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	உடல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		நொடிகள்	நிமிடம்	நொடிகள்	நிமிடம்	நொடிகள்	நிமிடம்
1.	வேகமாக ஒட்டும் ஆற்றல் (Speed) 50 மீ. ஒட்டம்	நொடிகள்	நிமிடம்	நொடிகள்	நிமிடம்	நொடிகள்	நிமிடம்
2.	அதிகமாக தாக்குப் பிடிக்கும் திரன் (Endurance) 800 மீ. ஒட்டம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்	நிமிடம்
3.	உடல் வலிமை (Strength) கூண்டு எறியல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
4.	உந்து திறன் (Explosive Power) தாண்டுதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
5.	ஏழாறுபுத்த திறன் (Agility) 6 x 10 M Run	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்	நொடிகள்
50-க்கு மேல்த பதிப்பெண்கள்							
** பொத்தத்தில் தரம் _____							
தேர்வுகள் நடத்தப்பட்ட நாள் _____							
உட்கள்		முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
குறிக்காத	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>
உடல்	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>
தகுதியில்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>
முன்னேற்ற	<input type="checkbox"/>	திரன்	<input type="checkbox"/>	திரன்	<input type="checkbox"/>	திரன்	<input type="checkbox"/>
வேண்டும் (✓)	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>
	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>
	<input type="checkbox"/>	ஏழாறுபுத்த திறன்	<input type="checkbox"/>	ஏழாறுபுத்த திறன்	<input type="checkbox"/>	ஏழாறுபுத்த திறன்	<input type="checkbox"/>
உட்கவல்லி ஆதிர்யூர் / இடக்குள் கைபொப்பம்							
வகுப்பு ஆதிர்யூர் கைபொப்பம்							
அறிக்கை அட்டை வழங்கப்பட்ட நாள்							
பெற்றோர் / பருவப்பெண் கைபொப்பம்							
குறிப்பு: தயவு செய்து கண்டுக்கட்டினால் அட்டைவகையை கடைபிடிக்கவும். ** பரணை / மாணவியர் பெற்ற மதிப்பெண்களின் அடிப்படையில் தரம் நிர்ணயம் செய்யப்பட்டுள்ளது.							



பள்ளிச்  
சின்னம்

## உடல் திறன் மற்றும் விளையாட்டுத் திறமை அறிக்கை அட்டை

வ. எண்.	இணைந்த உடல் திறன் தோல்வியடையுள்ள போட்டிகள்	மதிப்பெண் அடிப்படையில் 5-க்கும் மேல் பெற்ற உரிய கட்டத்தில் (✓) குறியீடு செய்யவும்	விளையாட்டுகள்	தனிநபர் / போட்டிகள்
1.	வேகமாக ஓடும் ஆற்றல் மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி கால்பந்து, லைக்கிள் பந்தாட்டம்	தடகைம், குத்துச் சண்டை, ஸ்குவாஷ், டிஸ்காஸ்த்ரோன்
2.	வேகமாக ஓடும் ஆற்றல் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கால்பந்து, டென்னிஸ், வாலிபால்	டென்னிஸ், தடகைம்-ஒடுதல், உயரம், நீளம் தாண்டுதல்
3.	வேகமாக ஓடும் ஆற்றல் மற்றும் உந்து திறன்	<input type="checkbox"/>	மேகைப்பந்து, கடைப்பந்து, கால்பந்து, வாலிபால்	தடகைம்-உயரம், நீளம் தாண்டுதல், ஸ்குவாஷ்
4.	வேகமாக ஓடும் ஆற்றல் மற்றும் எழுகூறுப்பு திறன்	<input type="checkbox"/>	சிறகுப்பந்து, கைப்பந்து, மேகைப்பந்து	சிறகுப்பந்து, ஸ்குவாஷ், ஒடுதல், வளர்ச்சி (டென்சிங்)
5.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி, டென்னிஸ்	நீச்சல், படகோட்டும் போட்டி, தடகைம், குத்துச்சண்டை
6.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உந்து திறன்	<input type="checkbox"/>	கடைப்பந்து, ஹாக்கி	தடகைம்-நீளம் தாண்டுதல், நீச்சல்
7.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் எழுகூறுப்பு திறன்	<input type="checkbox"/>	ஹாக்கி, டென்னிஸ், கால்பந்து, கடைப்பந்து, கிரிக்கெட்	தடகைம்-நீளம் தாண்டுதல், நீச்சல்
8.	உடல் வலிமை மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கைப்பந்து, ஹாக்கி, டென்னிஸ்	தடகைம்-ஒடுதல், தட்டு, எட்டி எறிதல், டென்னிஸ்
9.	உடல் வலிமை மற்றும் எழுகூறுப்பு திறன்	<input type="checkbox"/>	கடைப்பந்து, கிரிக்கெட்	பலகூறுக்குதல் பகலுத்தம்
10.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் எழுகூறுப்பு திறன்	<input type="checkbox"/>	கைப்பந்து, ஹாக்கி, டென்னிஸ்	தடுக்காட்டிப்பாட்டம், தடகைம்-உயரம், நீளம் தாண்டுதல்

உட்கள் குறுந்தகை ஊக்கப்படுத்தும் வகையில் ஒரு விளையாட்டு விளையாட்டு வீரர் உருவாக்குங்கள்

(குறியீடு விளையாட்டு மேம்பாட்டு ஆணையத்தால் இடம்பெறும் தயாரிக்கப்பட்டது)

உட்கள் குறுந்தகை ஊக்கப்படுத்தும் வகையில் ஒரு விளையாட்டு வீரர் உருவாக்குங்கள்

தலைமை ஆசிரியர் / ஆசிரியை  
கையொப்பம்

உட்கள் குறுந்தகை ஊக்கப்படுத்தும் வகையில் ஒரு விளையாட்டு வீரர் உருவாக்குங்கள்

தலைமை ஆசிரியர் / ஆசிரியை  
கையொப்பம்

தமிழ்நாடு விளையாட்டு மேம்பாட்டு ஆணையம் 6-ம் வகுப்பு மாணவியர்களுக்கு குறித்த தரம்					
Speed வேகம் ஆற்றல் 50 மீ. ஓட்டம் (நேரடியில்)	Endurance அதிகமாக தாக்குப் பிடிக்கும் திர்ள் 600 மீ. ஓட்டம் (நேரடியில்)	Strength வலிமை (குண்டு எறிதல்) (மீட்டரில்)	Explosive Power உந்து திறன் நீளம் தாண்டுதல் (மீட்டரில்)	Agility (6x10m) ஈறுறுப்புத் திர்ள் 6x10 மீ. ஓட்டம் (நேரடியில்)	Marks மதிப்பெண் ஒதுக்கீடு
8.9 நேரடி மற்றும் அதற்கு கீழ்	3:00.0 நிமிடம் மற்றும் அதற்கு கீழ்	3.32 மீட்டர் மற்றும் அதற்கு மேல்	3.51 மீட்டர் மற்றும் அதற்கு மேல்	17.5 மீட்டர் மற்றும் அதற்கு கீழ்	10
9.0 முதல் 9.3	3:00.1 முதல் 3:15.0	3.07 முதல் 3.31	3.26 முதல் 3.50	17.6 முதல் 18.1	9
9.4 முதல் 9.7	3:15.1 முதல் 3:30.0	2.82 முதல் 3.06	3.01 முதல் 3.25	18.2 முதல் 18.7	8
9.8 முதல் 10.1	3:30.1 முதல் 3:45.0	2.57 முதல் 2.81	2.76 முதல் 3.00	18.8 முதல் 19.3	7
10.2 முதல் 10.5	3:45.1 முதல் 4:00.0	2.32 முதல் 2.56	2.51 முதல் 2.75	19.4 முதல் 19.9	6
10.6 முதல் 10.9	4:00.1 முதல் 4:15.0	2.07 முதல் 2.31	2.26 முதல் 2.50	20.0 முதல் 20.5	5
11.00 முதல் 11.3	4:15.1 முதல் 4:30.0	1.82 முதல் 2.06	2.01 முதல் 2.25	20.6 முதல் 21.1	4
11.4 முதல் 11.7	4:30.1 முதல் 4:45.0	1.57 முதல் 1.81	1.76 முதல் 2.00	21.2 முதல் 21.7	3
11.8 முதல் 12.1	4:45.1 முதல் 5:00.0	1.32 முதல் 1.56	1.51 முதல் 1.75	21.8 முதல் 22.3	2
12.2 முதல் 12.5	5:00.1 முதல் 5:15.0	1.07 முதல் 1.31	1.26 முதல் 1.50	22.4 முதல் 22.9	1
12.6 மற்றும் அதற்கு மேல்	5:15.1 மற்றும் அதற்கு மேல்	0.06 மற்றும் அதற்கு கீழ்	1.25 மற்றும் அதற்கு கீழ்	23.0 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	உடல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		மேய்/சூ/அ/சூ/அ	நெய்யுகள்	மேய்யுகள்	நெய்யுகள்	மேய்யுகள்	நெய்யுகள்
1.	வேகம் ஓடும் ஆற்றல் (Speed) 50 மீ. ஓட்டம்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்
2.	அதிகமாக தாக்குப் பிடிக்கும் திறன் (Endurance) 600 மீ. ஓட்டம்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்
3.	உடல் வலிமை (Strength) குண்டு எறிதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
4.	உந்து திறன் (Explosive Power) நீளம் தாண்டுதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
5.	ஈறுறுப்புத் திறன் (Agility) 6 x 10 M Run	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்	நெய்யுகள்
50-க்கு மேல்த் மதிப்பெண்கள்							
** மொத்தத்தின் தரம்							
தேர்வுகள் நடத்தப்பட்ட தரம்							
		முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
உட்கள்	<input type="checkbox"/>	வேகம் ஓடும்	<input type="checkbox"/>	வேகம் ஓடும்	<input type="checkbox"/>	வேகம் ஓடும்	<input type="checkbox"/>
குழந்தை	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>
உடல்	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>
தகுதியில்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>
முன்நேர	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>
வேண்டும் (✓)	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>
	<input type="checkbox"/>	ஈறுறுப்புத் திறன்	<input type="checkbox"/>	ஈறுறுப்புத் திறன்	<input type="checkbox"/>	ஈறுறுப்புத் திறன்	<input type="checkbox"/>
உட்கல்வி ஆதிபிழர் / இட்கல்வி ஊடுபெறும்							
வகுப்பு ஆதிபிழர் கைவெறும்							
அறிக்கை 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100							
பெற்றோர் / ஸ்கூல்களின் கைவெறும்							
குறிப்பு: தயவு செய்து செய்து கொடுக்கப்பட்டுள்ள அட்டவணை எண் பிடிக்கவும்.							
** மாணவர் / மாணவியர் பெற்ற மதிப்பெண்களின் அடிப்படையில் தரம் நிர்ணயம் செய்யப்பட்டுள்ளது.							





தமிழ்நாடு வினாயாட்டு மேம்பாட்டு ஆணையம் 7-ம் வகுப்பு மாணவியர்களுக்கு குறித்த தரம்					
Speed வேகமாக ஒட்டி ஆற்றல் 50 மீ. ஒட்டம் (நொடிமில்)	Endurance அதிகமாக தாக்குப் பிடிக்கும் திறன் 600 மீ. ஒட்டம் (நொடிமில்)	Strength உடல் வலிமை (குண்டு எறிதல்) (மீட்டர்மில்)	Explosive Power உந்து திறன் நேரம் தாண்டுதல் (மீட்டர்மில்)	Agility (6x10m) ஏழாறுபுத்திறன் 6x10 மீ. ஒட்டம் (நொடிமில்)	Marks மதிப்பெண் ஒதுக்கீடு
8.3 முதல் மற்றும் அதற்கு கீழ்	2:51.0 நிமிடம் மற்றும் அதற்கு கீழ்	4.00 மீட்டர் மற்றும் அதற்கு மேல்	3.66 மீட்டர் மற்றும் அதற்கு மேல்	17.2 மீட்டர் மற்றும் அதற்கு கீழ்	10
8.4 முதல் 8.7	2:51.1 முதல் 3:06.0	3.70 முதல் 3.99	3.41 முதல் 3.65	17.3 முதல் 17.8	9
8.8 முதல் 9.1	3:06.1 முதல் 3:21.0	3.40 முதல் 3.69	3.16 முதல் 3.40	17.9 முதல் 18.4	8
9.2 முதல் 9.5	3:21.1 முதல் 3:36.0	3.10 முதல் 3.39	2.91 முதல் 3.15	18.5 முதல் 19.0	7
9.6 முதல் 9.9	3:36.1 முதல் 3:51.0	2.80 முதல் 3.09	2.66 முதல் 2.90	19.1 முதல் 19.6	6
10.0 முதல் 10.3	3:51.1 முதல் 4:06.0	2.50 முதல் 2.79	2.41 முதல் 2.65	19.7 முதல் 20.2	5
10.4 முதல் 10.7	4:06.1 முதல் 4:21.0	2.20 முதல் 2.49	2.16 முதல் 2.40	20.3 முதல் 20.8	4
10.8 முதல் 11.1	4:21.1 முதல் 4:36.0	1.90 முதல் 2.19	1.91 முதல் 2.15	20.9 முதல் 21.4	3
11.2 முதல் 11.5	4:36.1 முதல் 4:51.0	1.60 முதல் 1.89	1.66 முதல் 1.90	21.5 முதல் 22.0	2
11.6 முதல் 11.9	4:51.1 முதல் 5:06.0	1.30 முதல் 1.59	1.41 முதல் 1.65	21.1 முதல் 22.6	1
12.0 மற்றும் அதற்கு மேல்	5:07.1 மற்றும் அதற்கு மேல்	1.29 மற்றும் அதற்கு மேல்	1.40 மற்றும் அதற்கு மேல்	22.7 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	உடல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		மேய்/சூ/அ/பு/த/சு	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்
1.	வேகமாக ஒட்டம் ஆற்றல் (Speed) 50 மீ. ஒட்டம்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்
2.	அதிகமாக தாக்குப் பிடிக்கும் திறன் (Endurance) 600 மீ. ஒட்டம்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்
3.	உடல் வலிமை (Strength) குண்டு எறிதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
4.	உந்து திறன் (Explosive Power) நேரம் தாண்டுதல்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்	மீட்டர்
5.	ஏழாறுபுத்திறன் (Agility) 6 x 10 M Run	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்	நொடிமில்
50-க்கு மொத்த மதிப்பெண்கள்							
** மொத்தத்தில் தரம்							
தேர்வுகள் நடத்தப்பட்ட நாள்							
		முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
உங்கள் குடிநீரை உடல் தகுதியில் முன்பேர வேண்டும் (✓)		<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்	<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்	<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்	<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்	<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்	<input type="checkbox"/> வேகமாக ஒட்டம் ஆற்றல்
		<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/> அதிகமாக தாக்குப் பிடிக்கும் திறன்
		<input type="checkbox"/> உடல் வலிமை	<input type="checkbox"/> உடல் வலிமை	<input type="checkbox"/> உடல் வலிமை	<input type="checkbox"/> உடல் வலிமை	<input type="checkbox"/> உடல் வலிமை	<input type="checkbox"/> உடல் வலிமை
		<input type="checkbox"/> உந்து திறன்	<input type="checkbox"/> உந்து திறன்	<input type="checkbox"/> உந்து திறன்	<input type="checkbox"/> உந்து திறன்	<input type="checkbox"/> உந்து திறன்	<input type="checkbox"/> உந்து திறன்
		<input type="checkbox"/> ஏழாறுபுத்திறன்	<input type="checkbox"/> ஏழாறுபுத்திறன்	<input type="checkbox"/> ஏழாறுபுத்திறன்	<input type="checkbox"/> ஏழாறுபுத்திறன்	<input type="checkbox"/> ஏழாறுபுத்திறன்	<input type="checkbox"/> ஏழாறுபுத்திறன்
உட்கலை ஆசிரியர் / இயக்குநர் கையொப்பம்							
வகுப்பு ஆசிரியர் கையொப்பம்							
அறிக்கை அட்டை வழங்கப்பட்ட நாள்							
மேற்பேர / பாதுகாப்பாளர் கையொப்பம்							

குறிப்பு: \* தயவு செய்து கீழ்க்கண்டிருக்கின்ற அட்டைகளை கையொப்பம் செய்து கொடுக்கவும்.  
\*\* மாணவ / மாணவிடமிருந்து மதிப்பெண்கள் அடிப்படையில் தரம் நிர்ணயம் செய்யப்பட்டுள்ளது.





**பள்ளிச் சின்னம்**

**உடல்திறன் மற்றும் விளையாட்டுத் திறமை அறிக்கை அட்டை**

மாணவன் / மாணவி பெயர் .....  
 வரிசை எண்.....  
 வகுப்பு / பிரிவு .....  
 பிறந்த தேதி .....  
 வயது (ஆலை 1 அன்று).....  
 உயரம் (செ.மீ.-ல்) .....  
 எடை (கி.கி.-மில்).....  
 பள்ளியின் பெயர் மற்றும் முகவரி .....

ஊராட்சி ஒன்றியம் மற்றும் மாவட்டத்தின் பெயர் .....

வ. எண்.	இணைந்த உடல்திறன் தேர்வுப் போட்டிகள்	மதிப்பெண் அடிப்படையில் 5-க்கும் மேல் பெற்ற உரிய கூட்டத்தில் (%) குறியீடு செய்யவும்	குழு விளையாட்டுகள்	தனிநபர் / போட்டிகள்
1.	வேகமாக ஓடும் ஆற்றல் மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி கால்பந்து, செக்கிள் பந்தாட்டம்	தடகைம், குத்துச் சண்டை, ஸ்பூலாஷ், டுகாஷ்
2.	வேகமாக ஓடும் ஆற்றல் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கால்பந்து, டென்னிஸ், வாலிபால்	டென்னிஸ், தடகைம்-ஒடுதல், உயரம், நீளம் தாண்டிதல்
3.	வேகமாக ஓடும் ஆற்றல் மற்றும் உந்து திறன்	<input type="checkbox"/>	மேஸ்பந்து, கூடைய்து, கால்பந்து, வாலிபால்	தடகைம் - உயரம், நீளம் தாண்டிதல், ஸ்பூலாஷ்
4.	வேகமாக ஓடும் ஆற்றல் மற்றும் ஊழாட்டி திறன்	<input type="checkbox"/>	சிறுகுப்பந்து, கைப்பந்து, மேஸ்பந்து	சிறுகுப்பந்து, ஸ்பூலாஷ், ஒடுதல், வளர்வோர் (டென்சிங்)
5.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உடல் வலிமை	<input type="checkbox"/>	கிரிக்கெட், ஹாக்கி, டென்னிஸ்	நீச்சல், படகோட்டும் போட்டி, தடகைம், குத்துச்சண்டை
6.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் உந்து திறன்	<input type="checkbox"/>	கூடைய்து, ஹாக்கி	தடகைம்-நீளம் தாண்டிதல், நீச்சல்
7.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் ஊழாட்டி திறன்	<input type="checkbox"/>	ஹாக்கி, டென்னிஸ், கால்பந்து, கூடைய்து, கிரிக்கெட்	தடகைம்-நீளம் தாண்டிதல், நீச்சல்
8.	உடல் வலிமை மற்றும் அதிகமாக தாக்குப் பிடிக்கும் திறன்	<input type="checkbox"/>	செய்தலுப்பந்து, டென்னிஸ்	தடகைம்-ஒன்று, தடகைம்-உயரம், தடகைம்-நீளம்
9.	உடல் வலிமை மற்றும் ஊழாட்டி திறன்	<input type="checkbox"/>	கூடைய்து, கிரிக்கெட்	பருத்தாக்குதல் மல்பந்தம்
10.	அதிகமாக தாக்குப் பிடிக்கும் திறன் மற்றும் ஊழாட்டி திறன்	<input type="checkbox"/>	செய்தலுப்பந்து, கூடைய்து	ஜிம்னாஸ்டிக்ஸ், தடகைம்-உயரம், நீளம் தாண்டிதல்

**உட்கள் குழந்தையை ஊக்கப்படுத்துங்கள் வீட்டில் ஒரு விளையாட்டு வீரனாக உருவாக்குங்கள்**

தலைமை ஆசிரியர் / ஆசிரியை கையொப்பம்

**குடியிருந்து விளையாட்டு போட்டி ஆணையத்தால் இப்படி உயரம் தயாரிக்கப்பட்டு**

தமிழ்நாடு விளையாட்டு மேம்பாட்டு ஆணையம் 8-ம் வகுப்பு மாணவியர்களுக்கு குறித்த தரம்					
Speed வேகமாக ஒட்டும் ஆற்றல் 50 மீ. ஒட்டம் (நொடிமில்)	Endurance அதிகமாக நடக்கும் பிடிக்கும் திர்நர் 600 மீ. ஒட்டம் (நிமிடத்தில்)	Strength உடல் வலிமை (குண்டு எறிதல்) (மீட்டரில்)	Explosive Power உந்து திறன் (நேரம் தாண்டுதல்) (மீட்டரில்)	Agility (8x10m) ஈழறுபுட்த் திர்நர் 6x10 மீ. ஒட்டம் (நொடிமில்)	Marks மதிப்பெண் ஒதுக்கீடு
7.5 நொடி மற்றும் அதற்கு கீழ்	2:47.0 நிமிடம் மற்றும் அதற்கு கீழ்	5.40 மீட்டர் மற்றும் அதற்கு மேல்	3.81 மீட்டர் மற்றும் அதற்கு மேல்	16.1 மீட்டர் மற்றும் அதற்கு கீழ்	10
7.6 முதல் 7.9	2:47.1 முதல் 3:02.0	5.05 முதல் 5.39	3.56 முதல் 3.80	16.2 முதல் 16.7	9
8.0 முதல் 8.3	3:02.1 முதல் 3:17.0	4.70 முதல் 5.04	3.31 முதல் 3.54	16.8 முதல் 17.3	8
8.4 முதல் 8.7	3:17.1 முதல் 3:32.0	4.35 முதல் 4.69	3.06 முதல் 3.30	17.4 முதல் 17.9	7
8.8 முதல் 9.1	3:32.1 முதல் 3:47.0	4.00 முதல் 3.34	2.81 முதல் 3.05	18.0 முதல் 18.5	6
9.2 முதல் 9.5	3:47.1 முதல் 4:02.0	3.65 முதல் 3.99	2.56 முதல் 2.80	18.6 முதல் 19.1	5
9.6 முதல் 9.9	4:02.1 முதல் 4:17.0	3.30 முதல் 3.64	2.31 முதல் 2.55	19.2 முதல் 19.7	4
10.0 முதல் 10.3	4:17.1 முதல் 4:32.0	2.95 முதல் 3.29	2.01 முதல் 2.30	19.8 முதல் 20.3	3
10.4 முதல் 10.7	4:32.1 முதல் 4:47.0	2.60 முதல் 2.94	1.81 முதல் 2.05	20.4 முதல் 20.9	2
10.8 முதல் 11.1	4:47.1 முதல் 5:03.0	2.25 முதல் 2.59	1.56 முதல் 1.80	21.0 முதல் 21.5	1
11.2 மற்றும் அதற்கு மேல்	5:03.1 மற்றும் அதற்கு மேல்	2.24 மற்றும் அதற்கு கீழ்	1.55 மற்றும் அதற்கு கீழ்	21.6 மற்றும் அதற்கு மேல்	0

செயல் திறன் மற்றும் மதிப்பெண்கள்							
எண்	செயல் திறன் தேர்வுப் போட்டிகள்	முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்	
		புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
1.	வேகமாக ஒட்டும் ஆற்றல் (Speed) 50 மீ. ஒட்டம்	புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
2.	அதிகமாக தாக்குப் பிடிக்கும் திர்நர் (Endurance) 600 மீ. ஒட்டம்	புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
3.	உடல் வலிமை (Strength) குண்டு எறிதல்	புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
4.	உந்து திறன் (Explosive Power) நேரம் தாண்டுதல்	புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
5.	ஈழறுபுட்த் திறன் (Agility) 6 x 10 M Run	புள்ளி	நொடி	புள்ளி	நொடி	புள்ளி	நொடி
50-க்கு கொடுத்த மதிப்பெண்கள்							
** பொருத்தத்தில் தரம்							
தேர்வுகள் நடத்தப்பட்ட நாள்							
முதல் பருவம்		இரண்டாம் பருவம்		மூன்றாம் பருவம்			
உயர்ந்த	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>	வேகமாக ஒட்டும்	<input type="checkbox"/>
ஆற்றல்	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>	ஆற்றல்	<input type="checkbox"/>
உடல்	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>	அதிகமாக	<input type="checkbox"/>
தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>	தாக்குப் பிடிக்கும்	<input type="checkbox"/>
திர்நர்	<input type="checkbox"/>	திர்நர்	<input type="checkbox"/>	திர்நர்	<input type="checkbox"/>	திர்நர்	<input type="checkbox"/>
முன்னேற	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>	உடல் வலிமை	<input type="checkbox"/>
வேண்டும் (✓)	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>	உந்து திறன்	<input type="checkbox"/>
	<input type="checkbox"/>	ஈழறுபுட்த் திறன்	<input type="checkbox"/>	ஈழறுபுட்த் திறன்	<input type="checkbox"/>	ஈழறுபுட்த் திறன்	<input type="checkbox"/>
உடல்வலி ஆசிரியர் / இயக்குநர் எசுமொப்பம்	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
வகுப்பு ஆசிரியர் எசுமொப்பம்	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
அறிக்கை அட்டை வழங்கப்பட்ட நாள்	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
பெற்றோர் / பரிகாரம் எசுமொப்பம்	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

குறிப்பு: \* தயவு செய்து கொடுக்கப்பட்ட இடங்களில் வலிமை கைப்பிடிக்கவும்.  
\*\* மாணவியர் பெற்ற மதிப்பெண்களின் அடிப்படையில் தரம் நிர்ணயம் செய்யப்பட்டது.



**OOTY BLOCK**

S.No	School_Name	Block	Management	Category
<b>PUMS OOTY</b>				
1	PUMS, KERADAMATTAM	Ooty	Government	Middle School (I-VIII)
2	PUMS DENALAI	Ooty	Government	Middle School (I-VIII)
3	PUMS THAMBATTY	Ooty	Government	Middle School (I-VIII)
4	PUMS SOGATHORAI	Ooty	Government	Middle School (I-VIII)
5	PUMS HULLATHY	Ooty	Government	Middle School (I-VIII)
6	PUMS KADASOLAI	Ooty	Government	Middle School (I-VIII)
7	PUMS, KILKUNDAH	Ooty	Government	Middle School (I-VIII)
8	PUMS ODAIKADU	Ooty	Government	Middle School (I-VIII)
9	PUMS KILCOWHATTY	Ooty	Government	Middle School (I-VIII)
10	PUMS, MELCOWHATTY	Ooty	Government	Middle School (I-VIII)
11	PUMS, KENTHORAI	Ooty	Government	Middle School (I-VIII)
12	PUMS, T. MANIHATTY	Ooty	Government	Middle School (I-VIII)
13	PUMS, B. MANIHATTY	Ooty	Government	Middle School (I-VIII)
14	PUMS, MELKUNDAH	Ooty	Government	Middle School (I-VIII)
15	PUMS, MULLIGOOR	Ooty	Government	Middle School (I-VIII)
16	PUMS, PYKARA	Ooty	Government	Middle School (I-VIII)
17	PUMS, T.R. BAZAAR	Ooty	Government	Middle School (I-VIII)
18	PUMS, GLENMORGAN CAMP	Ooty	Government	Middle School (I-VIII)
19	PUMS, ADASHOLAI	Ooty	Government	Middle School (I-VIII)
20	PUMS MAYOR	Ooty	Government	Middle School (I-VIII)
<b>GHS/GHSS OOTY</b>				
1	GOVERNMENT HIGH SCHOOL, EKONI	Ooty	Government	High Schools (VI-X)
2	GOVT HIGH SCHOOL, THORAIHATTY	Ooty	Government	High Schools (VI-X)
3	GHSS ANIKORAI	Ooty	Government	Hr.Sec School (VI-XII)
4	GHSS, THUNERI	Ooty	Government	Hr.Sec School (I-XII)
5	GOVERNMENT HIGH SCHOOL, EBBANAD	Ooty	Government	High Schools (VI-X)
6	GHSS KANNERIMANTHANAI	Ooty	Government	Hr.Sec School (VI-XII)
7	GHSS KATHADIMATTAM	Ooty	Government	Hr.Sec School (VI-XII)
8	GHSS KINNAKORAI	Ooty	Government	Hr.Sec School (VI-XII)
9	GHS KALLAKORAI	Ooty	Government	High Schools (VI-X)
10	GHSS EMERALD	Ooty	Government	Hr.Sec School (VI-XII)
11	GHSS ITHALAR	Ooty	Government	Hr.Sec School (VI-XII)
12	GHSS, UDHAGAMANDALAM	Ooty	Government	Hr.Sec School (VI-XII)
13	GHS MULLIMALAI	Ooty	Government	High Schools (VI-X)
14	GHSS, KAGGUCHI	Ooty	Government	Hr.Sec School (VI-XII)
15	GHS NADUVATTAM	Ooty	Government	High Schools (VI-X)
16	GHSS- SHOLUR	Ooty	Government	Hr.Sec School (VI-XII)
17	GOVT HIGH SCHOOL, NUNTHALA	Ooty	Government	High Schools (VI-X)
18	GHS GIRLS MANJOOR KUNDAH	Ooty	Government	High Schools (VI-X)
19	GHSS MANJOOR	Ooty	Government	Hr.Sec School (VI-XII)
20	GHS BIKKATTY	Ooty	Government	High Schools (VI-X)
21	GHSS YEDAKAD	Ooty	Government	Hr.Sec School (VI-XII)
22	GHS YELLANALLI	Ooty	Government	High Schools (VI-X)
23	GHSS, THUMMANATTY	Ooty	Government	Hr.Sec School (VI-XII)
24	GOVERNMENT HIGH SCHOOL, MASINAGUDI	Ooty	Government	High Schools (VI-X)
25	GHS, CHINNA COONOR	Ooty	Government	High Schools (VI-X)
26	GOVERNMENT HIGH SCHOOL, KADANADU	Ooty	Government	High Schools (VI-X)
27	GHSS, DHAVANI	Ooty	Government	Hr.Sec School (VI-XII)
28	GHS MULLIMALAI	Ooty	Government	High Schools (VI-X)

AIDED OOTY				
1	SIVASAILAM CHAMRAJ HR.SEC. SCHOOL, CHAMRAJ ESTATE	Ooty	Partially Aid	Hr.Sec.School (VI-XII)
2	ST.THERESAS HS FINGER POST OOTY	Ooty	Fully Aided	High Schools (VI-X)
3	SRI SHANTHI VIJAI GIRLS HSS -OOTY	Ooty	Partially Aid	Hr.Sec School (VI-XII)
4	SACRED HEARTS HSS,OOTY	Ooty	Partially Aid	Hr.Sec School (VI-XII)
5	BETHLEHEM (G) HSS OOTY	Ooty	Fully Aided	Hr.Sec School (VI-XII)
6	CSIGELL MEM (G)HSS OOTY	Ooty	Fully Aided	Hr.Sec School (VI-XII)
7	ST.JOSEPHS HSS OOTY	Ooty	Fully Aided	Hr.Sec School (VI-XII)
8	CSI (CMM) HR. SEC. SCHOOL, OOTY	Ooty	Partially Aid	Hr.Sec School (VI-XII)
9	ST.MICHAEL'S HS, SHANTHOOR	Ooty	Fully Aided	High Schools (VI-X)
10	CSI HIGHER SECONDARY SCHOOL, KETTI	Ooty	Fully Aided	Hr.Sec School (VI-XII)
11	SACRED HEART MS, BANDHISHOLA	Ooty	Fully Aided	Middle School (I-VIII)
MATRICULATION OOTY				
1	LALITHA MATRIC HS ITHALAR	Ooty	Un-aided	High Schools (I-X)
2	DR.KJG MEM MAT BALACOLA	Ooty	Un-aided	High Schools (I-X)
3	VIVEKANANDA MATRICULATION HIGH SCHOOL M.PALADA	Ooty	Un-aided	High Schools (I-X)
4	NILGIRIS MATRIC HR SEC SCHOOL , LOVEDALE	Ooty	Un-aided	Hr.Sec School (I-XII)
5	PRIYADHARSHINI MATRIC SCHOOL, BIKKATTY	Ooty	Un-aided	High Schools (I-X)
6	NILGIRI MATRICULATION SCHOOL, RKS, YELLANALLI	Ooty	Un-aided	Middle School (I-VIII)
7	THE OXFORD CONTINENTAL MATRIC HS SCHOOL OOTY	Ooty	Un-aided	Hr.Sec School (I-XII)
8	ANNAI SARADADEVI MATRICULATION HR. SEC. SCHOOL, ANIKORAI	Ooty	Un-aided	Hr.Sec School (I-XII)
9	SRI RAMAKRISHNA MATRIC SCHOOL, NANJANAD	Ooty	Un-aided	Middle School (I-VIII)
10	NEW ERA MATRICULATION SCHOOL OOTY	Ooty	Un-aided	Middle School (I-VIII)
11	GURUKULAM MATRICULATION SCHOOL, AGALAR, THUNERI	Ooty	Un-aided	High Schools (I-X)
12	BRAESIDE MATRICULATION SCHOOL, NANJANAD	Ooty	Un-aided	High Schools (I-X)
13	SRVS MATRICULATION SCHOOL, GREEN FIELD, OOTY	Ooty	Un-aided	High Schools (I-X)
14	UNIQUE PUBLIC MATRICULATION SCHOOL, FERNHILL, OOTY	Ooty	Un-aided	Hr.Sec School (I-XII)
15	HOLY ANGEL MATRICULATION SCHOOL, THUMMANATTY	Ooty	Un-aided	High Schools (I-X)
16	SRI GIRI EESWARA MATRICULATION SCHOOL KAGGUCHI	Ooty	Un-aided	High Schools (I-X)
17	MAHATMA GANDHI MATRIC.HR.SEC.SCHOOL, KAGGUCHI	Ooty	Un-aided	Hr.Sec School (I-XII)
18	NIRMALA MATRICULATION SCHOOL, FINGERPOST	Ooty	Un-aided	High Schools (I-X)
19	CRESENT CASTLE MATRIC HR.SCHOOL OOTY	Ooty	Un-aided	Hr.Sec School (I-XII)
20	KUNDHA MATRIC SCHOOL,KOTRAKANDI, MANJOOR	Ooty	Un-aided	Middle School (I-VIII)
21	SRI KNM MATRICULATION SCHOOL, KETTI	Ooty	Un-aided	High Schools (I-X)
22	RGM VAALLEY VIEW PUBLIC MATRICULATION SCHOOL KETTI	Ooty	Un-aided	High Schools (I-X)
23	SATHYA SAI MATRICULATION HR.SEC.SCHOOL, AGALAR, THUNERI	Ooty	Un-aided	Hr.Sec School (I-XII)
24	ST.MICHAEL S MATRIC SCHOOL, SHANTHOOR, KETTI	Ooty	Un-aided	High Schools (I-X)



ANGLO INDIAN - OOTY				
1	BREEKS MEMORIAL ANGLO INDIAN HSS, OOTY	Ooty	Partially Aided	Hr.Sec School (I-XII)
MUNICIPAL SCHOOLS - OOTY				
1	MMS, RAMAKRISHNAPURAM	Ooty	Government	Middle School (I-VIII)
2	MMS, THALAIYATTUMUND	Ooty	Government	Middle School (I-VIII)
3	MHS KODAPPAMUND	Ooty	Government	High Schools (VI-X)
ADWD - OOTY				
1	ADI DRAVIDAR WELFARE MIDDLE SCHOOL, DODDABETTA	Ooty	Government	Middle School (I-VIII)
2	ADW MS. THAKKARBABA NAGAR, EMERALD	Ooty	Government	Middle School (I-VIII)
3	ADW GHS HOOKER	Ooty	Government	High Schools (VI-X)
GTR - OOTY				
1	GTR MS HALLIMOYAR	Ooty	Government	Middle School (I-VIII)
2	GOVERNMENT TRIBAL RESIDENTIAL MIDDLE SCHOOL BOKKAPURAM	Ooty	Government	High Schools (I-X)
3	GTRMS MAVANALLA	Ooty	Government	Middle School (I-VIII)
4	EKALAVYA MODEL RESIDENTIAL HIGHER SECONDARY SCHOOL M.PALADA	Ooty	Government	Hr.Sec School (VI-XII)

S.NO	SCHOOL NOMENCLATURE	NOS.
1	PUMS	20
2	GHSS/GHS	28
3	AIDED	11
4	MARTIC	24
5	ANGLO INDIAN	01
6	MUNICIPAL	03
7	ADW	03
8	GTR	04
TOTAL		94

COONNOOR BLOCK				
S.No	School_Name	Block	Management	Category
PUMS COONNOOR				
1	PUMS THUTHURMATTAM	Coonnoor	Government	Middle School (I-VIII)
2	PUMS MELUR	Coonnoor	Government	Middle School (I-VIII)
3	PUMS ARIHATTY	Coonnoor	Government	Middle School (I-VIII)
4	PUMS KODERI	Coonnoor	Government	Middle School (I-VIII)
5	PUMS ELITHORAI	Coonnoor	Government	Middle School (I-VIII)
6	PUMS BACKIANAGAR	Coonnoor	Government	Middle School (I-VIII)
7	PUMS SHOLADA	Coonnoor	Government	Middle School (I-VIII)
8	PUMS ANNANAGAR	Coonnoor	Government	Middle School (I-VIII)
9	PUMS BETTATTI	Coonnoor	Government	Middle School (I-VIII)
10	PUMS HALAKKARAI	Coonnoor	Government	Middle School (I-VIII)
11	PUMS KOLLIMALAI	Coonnoor	Government	Middle School (I-VIII)
12	PUMS JEGATHALA	Coonnoor	Government	Middle School (I-VIII)
13	MMS GANDHIPURAM	Coonnoor	Government	Middle School (I-VIII)
GHS/GHSS COONNOOR				
1	GHS MANJACOMBAI	Coonnoor	Government	High Schools (VI-X)
2	GOVT GIRLS HIGH SCHOOL, HUBBATHALAI	Coonnoor	Government	High Schools (VI-X)
3	GHSS-HUBBATHALAI	Coonnoor	Government	Hr.Sec School (VI-XII)
4	GHS HULICAL	Coonnoor	Government	High Schools (VI-X)
5	GHS THUTHURMATTAM	Coonnoor	Government	High Schools (VI-X)
6	GHSS, ADHIGARATTY	Coonnoor	Government	Hr.Sec School (VI-XII)
7	GHSS YEDAPPALLI	Coonnoor	Government	Hr.Sec School (VI-XII)
8	GHSS MELUR HOSATTY	Coonnoor	Government	Hr.Sec School (VI-XII)
9	ARIGNAR ANNA GHSS, COONNOOR	Coonnoor	Government	Hr.Sec School (VI-XII)
AIDED COONNOOR				
1	CSI MIDDLE SCHOOL, KOLACOMBAI	Coonnoor	Fully Aided	Middle School (I-VIII)
2	CSI MS COONNOOR	Coonnoor	Fully Aided	Middle School (I-VIII)
3	SRI SARGURU TRIBAL HS, COONNOOR	Coonnoor	Fully Aided	High Schools (VI-X)
4	ST.ANTONY'S HR. SEC. SCHOOL, COONNOOR	Coonnoor	Fully Aided	Hr.Sec School (VI-XII)
5	ST.MARYS (G) HSS COONNOOR	Coonnoor	Fully Aided	Hr.Sec School (VI-XII)
6	SRI SHANTHI VIJAI GIRLS HR SEC SCHOOL, CNR	Coonnoor	Partially Aided	Hr.Sec School (VI-XII)
7	ST. JOSEPHS BOYS HIGH SCHOOL, WELLINGTON BARRACKS	Coonnoor	Fully Aided	High Schools (VI-X)
8	ST. ANN'S GIRLS HR. SEC. SCHOOL, ARUVANKADU	Coonnoor	Partially Aided	Hr.Sec School (VI-XII)
9	SIRUMALAR HIGH SCHOOL, SELAS	Coonnoor	Fully Aided	High Schools (VI-X)
10	CSI HIGH SCHOOL, NONSUCH	Coonnoor	Fully Aided	High Schools (VI-X)
11	ST.JOSEPH AMS WELLINGTON COONNOOR	Coonnoor	Fully Aided	Middle School (I-VIII)
12	N S IYAH MEMORIAL HSS-KATARY DAM	Coonnoor	Fully Aided	Hr.Sec School (VI-XII)
MATRICULATION COONNOOR				
1	TIMBRE TOPS MATRICULATION SCHOOL, COONNOOR	Coonnoor	Un-aided	High Schools (I-X)
2	CHRIST THE KING METRICULATION SCHOOL, KOLAKOMBAI	Coonnoor	Un-aided	Middle School (I-VIII)
3	DEFENCE EMPLOYEES MATRICULATION SCHOOL, ARUVANKADU	Coonnoor	Un-aided	High Schools (I-X)
4	ST.JOSEPHS MATRICULATION SCHOOL, ALWARPET, COONNOOR	Coonnoor	Un-aided	High Schools (I-X)
5	MRS. BULLMORE'S MATRICULATION SCHOOL, MOUNT PLEASANT, COONNOOR	Coonnoor	Un-aided	High Schools (I-X)
6	REACH MATRIC HSS COONNOOR	Coonnoor	Un-aided	Hr.Sec School (I-XII)

ANGLO INDIAN COONOR				
1	STANES ANGLO INDIAN HSS, COONOR	Coonor	Partially Aided	Hr.Sec School (I-XII)
2	ST JOSEPHS BOYS ANGLO INDIAN HSS, COONOR	Coonor	Partially Aided	Hr.Sec School (I-XII)
3	ST JOSEPHS CONVENT ANGLO INDIAN GIRLS HSS, COONOR	Coonor	Partially Aided	Hr.Sec School (I-XII)
MUNICIPAL SCHOOLS COONOR				
1	MUNICIPAL MIDDLE SCHOOL BANDISHOLAI	Coonor	Government	Middle School (I-VIII)
2	MMS ATTADI	Coonor	Government	Middle School (I-VIII)

S.NO	SCHOOL NOMENCLATURE	NOS.
1	PUMS	13
2	GHSS/GHS	09
3	AIDED	12
4	MARTIC	06
5	ANGLO INDIAN	03
6	MUNICIPAL	02
	TOTAL	45



KOTAGIRI BLOCK				
S.No	School_Name	Block	Management	Category
<b>PUMS KOTAGIRI</b>				
1	PUMS, KAIRBETA	Kotagiri	Government	Middle School (I-VIII)
2	PUMS, GUNDADA	Kotagiri	Government	Middle School (I-VIII)
3	PUMS, SACKATHA	Kotagiri	Government	Middle School (I-VIII)
4	PUMS, HORASHOLAI	Kotagiri	Government	Middle School (I-VIII)
<b>GHS/GHSS KOTAGIRI</b>				
1	GHS SHOLUR KOTHAGIRI	Kotagiri	Government	High Schools (VI-X)
2	GOVERNMENT HIGH SCHOOL, SULLIGUDU	Kotagiri	Government	High Schools (VI-X)
3	GOVERNMENT HIGH SCHOOL, BILLICOMBAI	Kotagiri	Government	High Schools (VI-X)
4	GHS, KOOKALTHORAI	Kotagiri	Government	High Schools (VI-X)
5	GHS THENGUMARADA	Kotagiri	Government	High Schools (VI-X)
6	GHS, MILIDHANE	Kotagiri	Government	High Schools (VI-X)
7	GHSS NEDUGULA	Kotagiri	Government	Hr.Sec School (VI-XII)
8	GOVERNMENT HIGH SCHOOL, KAIRCUMBAI	Kotagiri	Government	High Schools (VI-X)
9	GHS SHOLURMATTAM	Kotagiri	Government	High Schools (VI-X)
10	GHSS, KIL-KOTAGIRI	Kotagiri	Government	Hr.Sec School (VI-XII)
11	GHS, KENGARAI	Kotagiri	Government	High Schools (VI-X)
12	GHS KONAVAKORAI	Kotagiri	Government	High Schools (VI-X)
13	GHS, KATTABETU	Kotagiri	Government	High Schools (VI-X)
14	GHS, KOTTACOMBAI	Kotagiri	Government	High Schools (VI-X)
15	GHS ARAVENU	Kotagiri	Government	High Schools (VI-X)
16	GHS, KANNERIMUKU	Kotagiri	Government	High Schools (VI-X)
17	GHSS KOTAGIRI	Kotagiri	Government	Hr.Sec School (VI-XII)
<b>AIDED</b>				
1	ST.ANTONY'S MS, KOTAGIRI	Kotagiri	Fully Aided	Middle School (I-VIII)
2	NALLAYAN MS, KOTAGIRI	Kotagiri	Fully Aided	Middle School (I-VIII)
3	ST.MARY'S HS, KOTAGIRI	Kotagiri	Partially Aid	High Schools (VI-X)
4	CSI HSS KOTAGIRI	Kotagiri	Partially Aid	Hr.Sec School (VI-XII)
5	ST.MARYS GIRLS HSS KOTAGIRI	Kotagiri	Fully Aided	Hr.Sec School (VI-XII)
<b>MATRICULATION GUDALUR</b>				
1	ALPHA GK MATRICULATION SCHOOL ARAVENU KOTAGIRI	Kotagiri	Un-aided	High Schools (I-X)
2	HRM MEMORIAL MATRIC SCHOOL HITAKAL	Kotagiri	Un-aided	High Schools (I-X)
3	PANDIARAJ MEMORIAL MATRIC HIGHER SECONDARY SCHOOL, KOTAGIRI	Kotagiri	Un-aided	Hr.Sec School (I-XII)
4	ST.MARY'S HOME MAT.SCHOOL, KOTAGIRI	Kotagiri	Un-aided	High Schools (I-X)
5	SRI KALAIMAGAL MATRICULATION SCHOOL, SOGATHTHORAI	Kotagiri	Un-aided	High Schools (I-X)
6	HILLFORT MATRICULATION & HIGHER SECONDARY SCHOOL, KEIRCUMBAI	Kotagiri	Un-aided	Hr.Sec School (I-XII)
7	ST.ANTONY'S MATRICULATION SCHOOL, SHOLURMATTAM	Kotagiri	Un-aided	High Schools (I-X)
8	VISWASHANTHI VIDYALAYA MATRIC SCHOOL, KOTAGIRI	Kotagiri	Un-aided	High Schools (I-X)
9	GREEN VALLEY MATRICULATION SCHOOL	Kotagiri	Un-aided	Hr.Sec School (I-XII)
<b>GTR GUDALUR</b>				
1	GTR MS, ARAVENU	Kotagiri	Government	Middle School (I-VIII)
2	GTR HSS KUNJAPPANAI	Kotagiri	Government	Hr.Sec School (VI-XII)

S.NO	SCHOOL NOMENCLATURE	NOS.
1	PUMS	04
2	GHSS/GHS	17
3	AIDED	05
4	MARTIC	09
5	ANGLO INDIAN	---
6	MUNICIPAL	---
7	GTR	02
	TOTAL	37



GUDALUR BLOCK				
S.No	School_Name	Block	Management	Category
<b>PUMS GUDALUR</b>				
1	PUMS PERIASHOLAI	Gudalur	Government	Middle School (I-VIII)
2	PUMS DEVAN 2	Gudalur	Government	Middle School (I-VIII)
3	PUMS VANDIPETTAI	Gudalur	Government	Middle School (I-VIII)
4	PUMS GANDHI NAGAR	Gudalur	Government	Middle School (I-VIII)
5	PUMS NEWHOPE	Gudalur	Government	Middle School (I-VIII)
6	PUMS DEVALA	Gudalur	Government	Middle School (I-VIII)
7	PUMS ATHIPALI	Gudalur	Government	Middle School (I-VIII)
8	PUMS DEVALAHATTY	Gudalur	Government	Middle School (I-VIII)
9	PUMS PEARL DIVISION	Gudalur	Government	Middle School (I-VIII)
10	PUMS NANTHATTY	Gudalur	Government	Middle School (I-VIII)
11	PUMS FIRSTMILE GUDALUR	Gudalur	Government	Middle School (I-VIII)
12	PUMS MAYFIELD	Gudalur	Government	Middle School (I-VIII)
13	PUMS BHARATHINAGAR	Gudalur	Government	Middle School (I-VIII)
14	PUMS GURRENCY	Gudalur	Government	Middle School (I-III)
15	PUMS KARAKOLLY	Gudalur	Government	Middle School (I-VIII)
16	PUMS MUTHIRAKOLLI	Gudalur	Government	Middle School (I-VIII)
17	PUMS, DEVARSHOLAI	Gudalur	Government	Middle School (I-VIII)
18	PUMS VILLANGORE	Gudalur	Government	Middle School (I-VIII)
19	PUMS KOZHIPALAM	Gudalur	Government	Middle School (I-VIII)
<b>GHS/GHSS GUDALUR</b>				
1	GHS NELAKKOTTAI	Gudalur	Government	High Schools (VI-X)
2	GHSS, SREEMADURAI	Gudalur	Government	Hr.Sec School (VI-XII)
3	GOVERNMENT HIGH SCHOOL, PAKKANA	Gudalur	Government	High Schools (VI-X)
4	GOVERNMENT HIGH SCHOOL, PUTHURVAYAL	Gudalur	Government	High Schools (VI-X)
5	GOVERNMENT HR. SEC. SCHOOL, GUDALUR	Gudalur	Government	Hr.Sec School (VI-XII)
6	GOVERNMENT HIGH SCHOOL CHOONDY	Gudalur	Government	High Schools (VI-X)
7	GOVERNMENT HIGH SCHOOL DHARMAGIRI	Gudalur	Government	High Schools (VI-X)
8	GHSS OVALLEY	Gudalur	Government	Hr.Sec School (VI-XII)
9	GHS AROTTUPARAI	Gudalur	Government	High Schools (VI-X)
10	GHSS DEVARSHOLA	Gudalur	Government	Hr.Sec School (VI-XII)
11	GHS KOTTAMEDU	Gudalur	Government	High Schools (VI-X)
12	GOVERNMENT HIGH SCHOOL PULIYAMBARA	Gudalur	Government	High Schools (VI-X)
13	GHS PADANTHORAI	Gudalur	Government	High Schools (VI-X)
14	GOVERNMENT HIGH SCHOOL PONNUR	Gudalur	Government	High Schools (VI-X)
15	GHS KARIYASHOLAI	Gudalur	Government	High Schools (VI-X)
<b>AIDED</b>				
1	SRI SHANTHI VIJAI HSS MASINAGUDI	Gudalur	Partially Aid	Hr.Sec School (VI-XII)
2	ST. MARY'S HIGH SCHOOL UPPER GUDALUR	Gudalur	Partially Aid	High Schools (VI-X)
3	FATIMA GIRLS HIGHER SECONDARY SCHOOL , GUDALUR	Gudalur	Partially Aid	Hr.Sec School (VI-XII)
4	ST THOMAS HSS MT NAGAR	Gudalur	Partially Aid	Hr.Sec School (VI-XII)
5	BHARATH MATHA HSS UPPATTY	Gudalur	Partially Aid	Hr.Sec School (VI-XII)
<b>MATRICULATION GUDALUR</b>				
1	IDEAL MATRIC HIGHER SECONDARY SCHOOL, T.K.PET, GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
2	SACRED HEART MHSS KAYYUNNI	Gudalur	Un-aided	Hr.Sec School (I-XII)
3	GOOD SHEPHERD MATRIC SCHOOL MASINAGUDI	Gudalur	Un-aided	High Schools (I-X)
4	MTS MATRICULATION HIGH SCHOOL PADANTHORAI	Gudalur	Un-aided	High Schools (I-X)

5	ST ANTONYS MAT HSS, RAJAGOPALAPURAM, GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
6	HOLY CROSS MATRIC HSS DEVARSHOLAI	Gudalur	Un-aided	Hr.Sec School (I-XII)
7	KALAIVANI MAT HSS GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
8	SRI RAMAKRISHNA MATRIC HS GUDALUR	Gudalur	Un-aided	High Schools (I-X)
9	BHARATH COMMUNITY MATRIC HSS GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
10	BRINDAVAN MATRICULATION SCHOOL, ATHIPALY	Gudalur	Un-aided	High Schools (I-X)
11	ST SEBASTIAN MAT HS, MANVAYAL, SREEMADURAI	Gudalur	Un-aided	High Schools (I-X)
12	GTMO MATRIC HSS CHEMBALA, GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
13	AL HIDHAYA MATRIC SCHOOL, OTTUVAYAL	Gudalur	Un-aided	High Schools (I-X)
14	AL-AMEEN MATRICULATION SCHOOL, DEVARSHOLAI	Gudalur	Un-aided	High Schools (I-X)
15	GRG MEMORIAL HR SEC SCHOOL, VAZHAIHOTTAM	Gudalur	Un-aided	Hr.Sec School (VI-XII)
16	GTMO HR SEC SCHOOL GUDALUR	Gudalur	Un-aided	Hr.Sec School (VI-XII)
17	MORNING STAR HSS GUDALUR	Gudalur	Un-aided	Hr.Sec School (I-XII)
18	NOORUL HUDHA HS YELLAMALAI	Gudalur	Un-aided	High Schools (VI-X)
19	CSI HIGH SCHOOL, PADANTHORAI	Gudalur	Un-aided	High Schools (I-X)
<b>GTR GUDALUR</b>				
1	GTRHS KARGUDI	Gudalur	Government	High Schools (VI-X)
2	GTRMS THORAPALLY	Gudalur	Government	Middle School (I-VIII)

S.NO	SCHOOL NOMENCLATURE	NOS.
1	PUMS	19
2	GHSS/GHS	15
3	AIDED	05
4	MARTIC	19
5	ANGLO INDIAN	---
6	MUNICIPAL	---
7	GTR	02
<b>TOTAL</b>		<b>60</b>



PANDALUR BLOCK				
S.No	School_Name	Block	Management	Category
<b>PUMS PANDALUR</b>				
1	PUMS CHERANGODE	Pandalur	Government	Middle School (I-VIII)
2	PUMS MARADI	Pandalur	Government	Middle School (I-VIII)
3	PUMS PATTAVAYAL	Pandalur	Government	Middle School (I-VIII)
4	PUMS VAZHAVAYAL	Pandalur	Government	Middle School (I-VIII)
5	PUMS KAKKUNDI	Pandalur	Government	Middle School (I-VIII)
6	PUMS CHERAMBADI	Pandalur	Government	Middle School (I-VIII)
<b>GHS/GHSS PANDALUR</b>				
1	GHSS BITHERKAD	Pandalur	Government	Hr.Sec School (VI-XII)
2	GHS KUNTHALADY	Pandalur	Government	High Schools (VI-X)
3	GHS MANNATHIVAYAL	Pandalur	Government	High Schools (VI-X)
4	GHS(G) ERUMAD	Pandalur	Government	High Schools (VI-X)
5	GHS KAYYUNNI	Pandalur	Government	High Schools (VI-X)
6	GHSS, ERUMAD	Pandalur	Government	Hr.Sec School (VI-XII)
7	GHSS AMBALAMOOLA	Pandalur	Government	Hr.Sec School (VI-XII)
8	GHS AMBALAVAYAL	Pandalur	Government	High Schools (VI-X)
9	PUMS NAICKENSHOLAI	Pandalur	Government	Middle School (I-VIII)
10	GHSS CHERAMBADY	Pandalur	Government	Hr.Sec School (VI-XII)
11	GHSS KOLAPALLY	Pandalur	Government	Hr.Sec School (VI-XII)
12	PUMS UPPATTY	Pandalur	Government	Middle School (I-VIII)
13	GHS ATHIKUNNA	Pandalur	Government	High Schools (VI-X)
14	GHSS PANDALUR	Pandalur	Government	Hr.Sec School (VI-XII)
15	GHSS DEVALA	Pandalur	Government	Hr.Sec School (VI-XII)
<b>AIDED PANDALUR</b>				
1	ST FRANCIS XAVIER(G) HS PANDALUR	Pandalur	Fully Aided	High Schools (VI-X)
<b>MATRICULATION PANDALUR</b>				
1	NILGIRI MATRICULATION HIGHER SECONDARY SCHOOL ERUMAD	Pandalur	Un-aided	Hr.Sec School (I-XII)
2	TEWS MAT HR SEC SCHOOL PANDALUR	Pandalur	Un-aided	Hr.Sec School (I-XII)
3	ST THOMAS MATRIC HSS AYYANKOLLI	Pandalur	Un-aided	Hr.Sec School (I-XII)
4	M S S MATRICULATION HIGH SCHOOL, UPPATTY	Pandalur	Un-aided	High Schools (I-X)
5	HOLY ANGELS MATRIC	Pandalur	Un-aided	High Schools (I-X)
6	HOLY CROSS CONVENT MATRIC DEVALA	Pandalur	Un-aided	High Schools (I-X)
7	GLOBAL MATRICULATION SCHOOL DEVALA	Pandalur	Un-aided	Middle School (I-VIII)
8	SREE SARASWATHI VIVEKANANDA MAHA VIDHYALAYA MATRIC AYYANKOLLI	Pandalur	Un-aided	High Schools (I-X)
9	IMS MATRIC SCHOOL PAKKANA, GUDALUR	Pandalur	Un-aided	Middle School (I-VIII)
<b>GTR GUDALUR</b>				
1	GTRMS AYYANKOLLY	Pandalur	Government	Middle School (I-VIII)
2	GTRMS KAPPALA	Pandalur	Government	Middle School (I-VIII)
3	GTRMS PONNENI	Pandalur	Government	Middle School (I-VIII)
4	GTRMS MUKKATTY	Pandalur	Government	Middle School (I-VIII)
5	GOVERNMENT TRIBAL RESIDENTIAL HIGH SCHOOL, DEVALA	Pandalur	Government	High Schools (VI-X)



## PANDALUR BLOCK

S.NO	SCHOOL NOMENCLATURE	NOS.
1	PUMS	06
2	GHSS/GHS	15
3	AIDED	01
4	MARTIC	09
5	ANGLO INDIAN	---
6	MUNICIPAL	---
7	GTR	05
TOTAL		36

S.NO	SCHOOL NOMENCLATURE	COONNOOR	OOTY	KOTAGIRI	GUDALUR	PANDALUR	TOTAL
1	PUMS	13	20	04	19	06	62
2	GHSS/GHS	09	28	17	15	15	84
3	AIDED	12	11	05	05	01	34
4	MARTIC	06	24	09	19	09	67
5	ANGLO INDIAN	03	01	---	---	---	04
6	MUNICIPAL	02	03	---	---	---	05
7	GTR	---	04	02	02	05	13
8	ADW	---	03	---	---	---	03
	TOTAL	45	94	37	60	36	272

**GRAND TOTAL: 272**



SPORTS DEVELOPMENT AUTHORITY OF TAMILNADU, THE NILGIRIS,  
UDHAGAMANDALAM.

From  
S. JAYACHANDRAN,  
DISTRICT SPORTS & YOUTH WELFARE OFFICER,  
HADP Open Air Stadium,  
Govt. Botanical Garden Road,  
Udhagamandalam - 643 001.  
Ph.No.2444084 / 7401703491.

To  
The Principal,  
Nilgiris College of Arts & Science,  
Thaloor,  
Konachal, Erumadu - 643239.  
The Nilgiris District.

**Rc.No.25/2019, dated:20.10.2020.**

Sir,

Sub: World Beaters Talent Spotting Scheme - conduct of Battery of Tests in Schools -  
Assigning of Volunteers to assist and monitor the activities of the scheme -  
- regarding.

- Ref: 1. G.O. No130, School Education (E2) Department, dated:20.8.2002.  
2. Principal Secretary / Member Secretary, Sports Development Authority of  
Tamilnadu, Chennai letter Rc.No.7548/TI-1/2020, dated:12.10.2020

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In the Government Order first cited above, it is ordered that, Battery of Tests under World Beaters Talent Spotting Scheme have to be conducted for the students of 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> standards and the consolidated Score Sheet of those students who have obtained 10 out of 10 Marks in any one test or, 8 or 9 Marks out of 10 in any 2 tests are to be sent to the District Sports & Youth Welfare Officer.

The Principal Secretary/ Member Secretary, SDAT, Chennai in the reference second cited letter has directed to assign volunteers to Schools to assist / conduct the Battery of Tests.

To monitor the activities of the scheme and ensure its successful implementation, a Committee has been formed. I am to inform your goodself that, Thiru SARIUL VARGHESE Physical Director of your college has been nominated as one of the member of the Committee.

The duties of the member is to ensure that, the Battery of Tests are conducted properly in the schools, assist the PETs wherever there are PETs / conduct the tests wherever there are no PETs and to monitor the successful implementation of the Scheme.

As such, I request your goodself to kindly grant permission to Thiru SARIUL VARGHESE Physical Director of your college to give a hand to SDAT alongwith few senior sportspersons, of your College ensuring 100% conduct of the Battery of tests in the Schools, in the Block, in the coming years.

The List of Schools and the Norms with regard to the conduct of the Battery of Tests are enclosed herewith for favour of kind perusal and solicit kind cooperation in the cause of Sports.



Yours faithfully,

*S. Jayachandran*  
20/10/2020  
District Sports & Youth Welfare  
Officer, The Nilgiris.

# ശാരീരികക്ഷമതാ പരിശോധന നിർബന്ധമാക്കി

താളൂർ ▶ തമിഴ്നാട് സ്റ്റോർട്സ് ഡെവലപ്പ്മെന്റ് അതോറിറ്റി സ്കൂൾ വിദ്യാർത്ഥികൾക്ക് ശാരീരികക്ഷമതാപരീക്ഷ നിർബന്ധമാക്കി. ഈ സാഹചര്യത്തിൽ നീലഗിരി ജില്ലയിലെ മുഴുവൻ വിദ്യാലയങ്ങളിലെയും കുട്ടികളെ ഫിറ്റ്നസ് ടെസ്റ്റ് നടത്തി റിപ്പോർട്ട് നൽകാൻ നീലഗിരി കോളേജ് കായികവിഭാഗം മേധാവി സരിൽ വർഗീസിനെ ചുമതലപ്പെടുത്തി.



സരിൽ വർഗീസ്

കായികാധ്യാപകരുടെ ഉത്തരവാദിത്വത്തിലാണ് പരിശോധന.

ആറു മുതൽ 12 -ാം തരം വരെയുള്ള കുട്ടികൾക്കാണ് പരിശോധന.

കായികയിനങ്ങളിൽ കഴിവുള്ള കുട്ടികളെ കണ്ടെത്തുകയെന്ന ലക്ഷ്യത്തോടെയാണിത്. ഫിഫയുടെ അംഗീകൃത റഫറി, നീലഗിരി കോളേജ് സ്റ്റോർട്സ് അക്കാദമി, യുവധാര എഫ്.സി. ഫുട്ബോൾ അക്കാദമികളുടെ പരിശീലകൻ എന്നീ നിലകളിൽ അഞ്ചുവർഷത്തെ പരിചയമാണ് സരിൽ വർഗീസിനെ തിരഞ്ഞെടുക്കാൻ കാരണം.