

Construction of Physical Fitness Norms for 13 – 15 Years High School Boys

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Abstract:- Physical fitness in children is risen up to a public health issue and concern, due to scientific findings reveal the onset of modern civilization diseases such as obesity, cardiovascular disease, which begins in early childhood due to sedentary life styles, lack of physical activity etc. Physical fitness awareness needs to be emphasized among young children and adulthood, through regular health assessment such as anthropometric measures, calculation of BMI etc. Norms are averages of physical fitness variables scores of large population of boys aged between 13-15 years. The 7 variables such as explosive strength, arm strength, abdominal strength, speed, agility, cardio-respiratory endurance & Flexibility were assessed by using standard norms. The study results showed that In sit up test the mean number of repetitions performed by 13 years old boys was 19.42 + 7.92, 22.64 + 8.34 repetitions by 14 years boys and 24.32 + 6.5 repetitions by 15 years high school boys. In standing broad jump test the mean centimeters reached by 13 years old boys was 116.4 + 5.2 centimeters, 122.4 + 6.12 centimeters by 14 years boys and 126.658 + 6.58 centimeters by 15 years old rural boys. In the percentile scale obtained from the present study it is evident that the highest performance score in sit up test among 13 years of aged boys was minimum 13 repetitions and maximum 23 repetitions. The study concluded that significant difference was found between the physical fitness parameters of 13 to 15 years high school boys.

I. INTRODUCTION

Physical fitness is an ability to cope with a individual state's of complete and total balance lifestyle involving the psychological, social and physiological aspects^[1,2] Physical fitness is also a state of wellbeing, which refers to the ability to perform daily tasks, sports, and occupations without undue fatigue or it is also stated have enough energy to engage in recreation activities.^[3,4] Norms are very useful to help to guide individual in the interpretation of the test results.^[5] Fitness testing normative data (norms) can be found associated with many fitness tests, but it is important for an individual to understand what they are and the possible limitations of using them. These norms are standardized test to assess the physical fitness of an individual.^[6]

II. SIGNIFICANCE OF STUDY

- Low physical fitness is strongly associated with risk for developing coronary heart disease, hypertension and type 2 diabetes mellitus, as well as mortality from cardiovascular disease, cancer, and all causes of mortality.
- Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities.
- College students, generally late adolescents (age of transition between childhood and self-sufficient adulthood), go through many physical and mental changes, that may have positive and negative influences on their lives.
- Field sports like hockey impose a wide range of physical demands on players such as speed, muscle endurance, power and agility.
- Excess body fat is a major health risk associated with many medical problems including low back pain, type II diabetes, and various forms of cancer, high blood pressure, and heart disease.
- This study may help in construction of norms and standardize the test items.

❖ *Statement of the Problem*

“Construction of physical fitness norms for 13 – 15 years high school boys”

❖ *Objectives of the Study*

- To construct the physical fitness norms
- To compare the physical fitness variables among 13 – 15 Years school boys

❖ *Hypotheses*

- **H₁:** There would be a significant difference between scores of physical fitness variables like explosive strength, arm strength, abdominal strength, speed, agility, cardio-respiratory endurance & Flexibility among boys aged between 13 Yrs, 14 Yrs & 15 Yrs.
- **H₂:** There would be a significant association between scores of physical fitness variables of boys with their selected socio-demographic variables.

❖ *Delimitations*

- The study will be conducted on 3000 high school boys aged between 13Yrs, 14 Yrs & 15 Yrs.
- The study is delimited to 1000 boys in each age group
- The study is further delimited to selected physical fitness variable

❖ *Limitations*

- Factors like diet, humidity & temperature
- Socio-economic and cultural background of the subjects
- No special motivational techniques will be used while conducting tests.

III. SELECTED VARIABLES

Selected physical fitness variables: Abdominal muscle strength and endurance, Agility fitness test, explosive leg strength, Muscular arm strength and Endurance

Socio demographic variables: It includes socio demographic characteristic of subjects like Age, Educational status, Religion, type of diet, Place of residence.

IV. RESEARCH METHODOLOGY

➤ *Research Approach:*

A descriptive approach was used in the present study, where it assesses the physical fitness variables of school boys.

➤ *Research Design:*

The Research Design adopted for this study was non-experimental descriptive research design.

➤ *Population:*

The population for the present study was school boys aged 13 Yrs, 14 Yrs & 15 Yrs.

➤ *Accessible Population:*

In the present study accessible population is school boys aged 13 Yrs, 14 Yrs & 15 Yrs .

➤ *Target Population:*

In the present study target population is school boys aged 13 Yrs, 14 Yrs & 15 Yrs studying in selected high schools of vijaypur Karnataka

➤ *Sample:*

In the present study sample consists of school boys aged between 13 to 15 years selected high schools in Vijayapur Karnataka.

➤ *Sampling Technique:*

Stratified random sampling technique.

➤ *Sample Size:*

A total of 1200 school boys were selected for study.

➤ *Setting of the Study:*

Darbar School, Siddeshwar school, BLDE school & PDJ schools were selected for the present study. And Adarsh colony, Hudko colony & Vajra Hanuman Nagar areas also were selected for the study.

➤ *Method of Data Collection:*

After clear instructions given by investigator, consent has been taken by all 3000 boys. Then data has been collected for the following Physical fitness variables of boys like explosive strength, arm strength, abdominal strength, speed, agility, cardio-respiratory endurance & Flexibility.

The 7 variables were observed by the following methods

- **Explosive Strength:** Was measured by **vertical jump**.
- **Arm Strength:** Was measured by a **Pull up test**.
- **Abdominal Strength:** Was measured by a **sit up test**.
- **Speed:** Was measured by **20 yard sprint run** with time recorded.
- **Agility:** Was measured by asking the subjects **to run a course** in the shortest possible time.
- **Cardio-Respiratory Endurance:** Was measured by **1 mile run test**.
- **Flexibility:** Was measured by a **sit and reach test** in which participants sat on the floor, with legs held straight by a tester.

➤ *Tool Used in the Present Study*

- **Vertical Jump:** Measuring tape, chalk for marking the wall
- **Pull Up Test:** Horizontal over-head bar
- **Sit Up Test:** Stop watch
- **20 Yard Sprint Run:** Stop watch
- **Sit & Reach Test:** Sit & reach box

V. STATISTICAL TECHNIQUES

- The data was analyzed by using both descriptive and inferential statistics. **Mean, standard deviation and paired t tests and ANOVA** were used to find out & to compare the health related physical fitness among 13 - 15 Yrs rural boys.
- **Chi square test** was used to find association between health related physical fitness scores with their selected socio-demographic variables.

VI. RESULTS OF THE STUDY

The data regarding height, body weight and BMI of 13 to 15 years old rural boys reveals that the mean height was 153.8 cms \pm 5.2 (13 years), 158.82 \pm 5.1(14 years) and 162.4 \pm 7.2(15 years).

The mean body weight and standard deviation of 13 to 15 years old rural boys was 40.26 \pm 6.12 (13 years), 46.52 \pm 6.32(14 years) and 48.36 \pm 7.26 (15 years). The mean

BMI and standard deviation was 16.98 ± 1.28 (13 years), 17.26 ± 1.16 (14 years) and 17.92 ± 1.46 (15 years).

In one mile run test the mean time taken by 13 years old boys was 8.64 ± 3.56 minutes, 8.22 ± 4.12 minutes by 14 years boys and 7.86 ± 3.21 minutes by 15 years old rural boys. .

In pull up test the mean centimeters reached by 13 years old boys was 28.36 ± 4.82 centimeters, 30.2 ± 4.68 centimeters by 14 years boys and 32.48 ± 5.21 centimeters by 15 years old rural boys.

In sit up test the mean number of repetitions done by 13 years old boys was 19.42 ± 7.92 repetitions, 22.64 ± 8.34 repetitions by 14 years boys and 24.32 ± 6.5 repetitions by 15 years old rural boys. . In sit and reach test the mean centimeters reached by 13 years old boys was 0.46 ± 7.45 centimeters, 1.24 ± 8.65 centimeters by 14 years boys and 1.86 ± 6.45 centimeters by 15 years old rural boys.

Comparison of health related physical fitness among 13 years and 14 years rural boys. There was a significant difference found in one mile run test with calculated t value 2.13 ($P < 0.031$), Vertical jump test $t = 2.62$ ($P < 0.043$), Sit up test $t = 4.18$ ($P < 0.026$) and sit and reach test $t = 8.34$ ($P < 0.015$).

Comparison of health related physical fitness among 13 years and 15 years rural boys. There was a significant difference found in one mile run test with calculated t value 4.26 ($P < 0.011$), Vertical jump test $t = 8.54$ ($P < 0.013$), Sit up test $t = 9.29$ ($P < 0.016$) and sit and reach test $t = 9.76$ ($P < 0.008$).

Comparison of health related physical fitness among 14 years and 15 years rural boys. There was a significant difference found in one mile run test with calculated t/ value 2.39 ($P < 0.032$), pull up test $t = 2.04$ ($P < 0.041$), Sit up test $t = 3.18$ ($P < 0.018$) and sit and reach test $t = 3.02$ ($P < 0.013$).

Comparison of health related physical fitness measures among 13 to 15 years' old rural boys. A significant difference was found in all the areas of Health related physical fitness. In one mile run the calculated variance was 4.21 ($P < 0.031$), 3.64 for vertical jump ($P < 0.043$), 4.16 for sit up test ($P < 0.026$), and 6.17 for sit and reach test with $p < 0.015$.

Comparison body composition among 13 years and 14 years rural boys. There was a significant difference found in Sub scapular skin fold thickness with calculated t value 3.57 ($P < 0.016$) and Triceps skin fold thickness $t = 2.98$ ($P < 0.012$).

Comparison body composition among 13 years and 15 years rural boys. There was a significant difference found in Sub scapular skin fold thickness with calculated t value

7.38 ($P < 0.029$) and Triceps skin fold thickness $t = 8.62$ ($P < 0.018$).

Comparison of body composition among 14 years to 15 years rural boys. There was a significant difference found in Sub scapular skin fold thickness with calculated t value 4.26 ($P < 0.022$) and Triceps skin fold thickness $t = 4.35$ ($P < 0.032$).

Comparison of body composition of 13 to 15 years' old rural boys. A significant difference was found in skin fold thickness among all the 3 groups. For Sub scapular skin fold thickness the calculated variance was 4.92 ($P < 0.014$) and for Triceps skin fold thickness the calculated value was 3.96 ($P < 0.041$). Hence there was significant difference observed between sub-scapular skin fold thickness and triceps skin fold thickness among all the three groups of 13 to 15 years' old rural boys.

VII. CONCLUSION

Health and physical fitness have a vital role in the life of school going children. Health related fitness is the ability to perform strenuous activity without excessive fatigue showing evidence of traits that limit the risks of developing the diseases and disorders which affect a person's functional capacity. Regular physical activity among children and adolescents will promote health and fitness. Norms physical fitness variables scores need to be constructed for large population.

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