A COMPARATIVE STUDY OF CARDIO RESPIRATORY ENDURANCE

BETWEEN 12-15 YEARS AND 16-18 YEARS

BOYS IN 12 MIN RUN TEST

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ABSTRACT

Endurance is ability to engage in activity for a long time without undue fatigue exhaustion or neuromuscular fatigue results of a person from an accumulation of acid waste materials. The reason of this accumulation is lack of adequate oxygen in working muscles. The purpose of the study is to measure the distance covered in twelve minutes run and walk as a measure of cardiovascular efficiency. Only twenty male students of Sports Authority of India (SAI), Siliguri were selected as the subjects for the present study. In the present study, the criterion measures were cardio respiratory endurance between 12-15 years and 16-18 years boys in 12 min run test. For analysis and interpretations of data co-efficient of correlation and 't' test were conducted. Significant result was observed in the 12-15 years and 16-18 years boys in 12 min run test.

Key Words: - Cardio respiratory endurance, boys in 12 min run test.

INTRODUCTION:

Running a very basic movement pattern is simply a highly representative example of human movement. Basically, man runs to adapt to the demands of his surrounding environment. Through a variety of forms of running men has been able to compete against nature of survival. He has been able to compete against his fellowmen as a test of his speed and endurance and of course, he has been able to experience the pleasure and joy of running for its own sake. Running therefore is a form of physical activity capable of adopting man to his environment.

In long distance running one must conserve energy by reducing their effort and frequency of striding.

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So endurance depends primarily on the intake of oxygen and the ability of the circulatory system to carry oxygen to the muscles. When an athlete is using up energy faster than he can take in oxygen to meet his body’s demands, he builds up an oxygen debt. If he is unable to rest or slow down long enough to replenish his oxygen he will eventually become exhausted and unable to perform. When the body has an inadequate oxygen supply during intense effort, it uses anaerobic energy sources.

Cardio-respiratory performances are closely related with running ability. Oxygen consumption, cardiac output, frequency of heart beat and blood pressure are some of the most important cardio-respiratory parameters, accelerating during exercise responses and controlling the cardio-respiratory performance.

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The simplest and most extensively applied way of testing circulatory functional capacity is to determine the heart rate during or after exercise. From the heart rate response the circulatory capacity can be evaluated. Many physical fitness test, including the famous Harvard step test have been develop by recording or counting heart rate response to a standardized work load.

The maximum oxygen uptake capacity is defined as the highest oxygen uptake the individual can attain during physical work or exercise while breathing air at sea level. Maximum oxygen uptake indicates how well various physiological functions can adjust to increase metabolic demands of exercise and work. In any muscular activities oxygen uptake shows a roughly linear increase as the work load increases. Although maximum oxygen uptake can be determined with a reasonable degree of accuracy, the method is rather time consuming, it requires fairly laboratory procedures and demands high degree of co-operation from the subjects.
For this reason several methods for predicting VO\(_2\) max from sub maximal exercise data have been developed. Under normal condition a high linear relationship exists between VO\(_2\) max and heart rate within any given individual. In physical education and sports prediction of VO\(_2\) max from sub maximal heart rate is now a day’s widely accepted and practiced. Distance runs have also commonly been used to estimate VO\(_2\) max in the field of physical education and sports. The evidence tends to support the hypothesis that longer the running distance the higher the degree of relationship to maximum oxygen uptake capacity.

PURPOSE OF THE STUDY:
1. To measure the distance covered in twelve minutes run and walk as a measure of cardiovascular efficiency.
2. To find out the relationship between 12-15 years group and 16-18 years boys.
3. To measure maximum Oxygen uptake from the 12 minute performance test.

METHODOLOGY:
The subjects of the present study were selected from two groups; one from 12-15 years and the other from 16-18 years. They were undergoing the training schedule programme of Sports Authority of India (S. A. I.) in the Siliguri, West Bengal. The entire subject resided in the S. A. I. hostel and had almost the same daily programme of sports authority. All the subjects possessed sound physique. The total number of subjects was Twenty (N=20). Ten students from each group were selected randomly for the study.

Criteria Measured
General endurance of the subjects was considered criteria for study. The general endurance was measured by coopers 12 min run and walk test.

Equipment used
1. Electronic stop watches
3. Whistle.
5. Flags

Test Administration

Procedure
In a running track, subjects used standing start. At the signal ready GO! The subject starts running the track. The running may be interspersed with walking. Six subjects ran at a time with having the subject’s pair off before the start of the event. The partner is instructor to count the number of laps that are run within the allotted time. When 11 minutes have elapsed, the instructor calls out the time left to run. At the end of 12 minutes, the instructor blows blast on his whistle and runner notes the flag he has just passed.

Scoring
Total distance was measured by meter of each of them.

Statistical Procedure
The standard statistical procedure had been adopted for analysis and interpretation of the data collected through various standard tests and measurements. Most of the statistical analyses were computed through computer. The result of the study was obtained by following statistical procedures as mentioned hereunder.

i) At first the mean and SD were computed.

ii) Co-efficient of correlation method was used for find out the relationship.

iii) To assess the comparison of the groups t-test (Garrett, 1973) was applied for indicating the significant difference.
RESULTS AND DISCUSSION:

Table-1 Comparison of means of 12 min run test performance between 12 to 15 years group and 16 to 18 years boys group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>12 to 15 years</th>
<th>16 to 18 years</th>
<th>SED</th>
<th>‘t’ ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.D.</td>
<td>±61.29</td>
<td>±192.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISTANCE</td>
<td>2422.5</td>
<td>2851.5</td>
<td></td>
<td>-6.33(S)</td>
</tr>
</tbody>
</table>

This table shows that the ‘t’ value of 12 min run test performance score 12 to 15 years and 16 to 18 years is -6.33. These ‘t’ value is significant. If it to be significant at the 0.05 and 0.01 level, it should be higher than the t value of 2.10 and 2.88 respectively.

It appears from the table 1 that mean scores of the two groups were not equal and mean performance score of 16 to 18 years group appears higher than 12-15 years group. However to ascertain the degree of difference ‘t’ test was conducted and obtained t-value was -6.33(S).

Therefore it may be concluded that group were significant different from each other respect of Cardio-respiratory endurance performance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-efficient of co-relation</td>
<td>12 to 15 years</td>
</tr>
<tr>
<td>0.62</td>
<td>0.79*</td>
</tr>
</tbody>
</table>

Table-2. Co-efficient of co-relation of each group between age and distance covered.
Table-2 shows the calculated values of 12 to 15 years boys are less than table value at 0.05 levels and 0.01 levels (0.632 at 0.05 levels and 0.765 at 0.01 levels at 8 df). So the above results show that there are no significance correlation in 12 to 15 years boy age group in respect of age and distance.

On the other hand the calculated values of 16 to 18 years boys are greater than table value at 0.05 levels and 0.01 levels (0.632 at 0.05 levels and 0.765 at 0.01 levels at 8 df). So the above results show that there are significant correlation in respect of age and distance of 16 to 18 years boys.

CONCLUSION:

From the result of the study following conclusion may be drawn

1. There is no significant correlation between age and distance covered in cooper’s test of 12 to 15 years boys.
2. Significant correlation exists between age and distance of 16 to 18 years boys.
3. The distance between 12 to 15 years and 16 to 18 years boys was significant.

References