Comparative Study on Resting Heart Rate, Vital Capacity and Peak Expiatory Flow Rate between Rural Students of West Bengal and Western Uttar Pradesh

Anindya Bhowmik, Dr.Sandeep Kumar

Abstract: The aim of the study was to compare the resting heart rate (RHR), vital capacity (VC) and peak expiatory flow rate (PEFR) between rural students of West Bengal and Western Uttar Pradesh. 60 rural school students of West Bengal state (W.B) and 60 rural school students of Western Uttar Pradesh state (W.U.P) were randomly selected. The RHR was measured by using manual process, VC and PEFR were measured by Wet Spirometer and Wrights Mini Peak Flow Meter. T-test was used to find out the significant of the study and level of significant was set at p<0.05. The anthropometric characteristics height, weight and BMI of subjects were assessed, that indicates W.U.P. school student was taller than W.B. school boys, and BMI was not significantly difference between them. The result of the study indicates RHR was not significantly difference and VC and PEFR were significantly difference between school boys of W.B and W.U.P.

Keywords: Rural Area, School Boys, Resting Heart Rate, Vital Capacity, Peak Expiatory Flow Rate, West Bengal, Western Uttar Pradesh.

1. INTRODUCTION
The lifestyle is the key of health status. The healthy lifestyle itself refers, free from sedentary lifestyle and hypokinetics diseases. Till now in India most of rural people socio-economic status dependent on agricultural activities. The rural children have better anthropometric and body composition status and higher physical fitness capacity in related to urban children [1-3]. In modern era the Obesity and COPD (Chronic Obstacle Pulmonary Disorder) are the most challenging diseases among individual of all ages. Day by day our daily life becomes more narrative, this trends also covered in childhood life. The high level of air pollution is the causes of various lungs disorders. It has no doubt that the rural environment or air pollution till now has pleasant, comparatively than metropolitan. In India, rural children has higher lungs capacity rather than urban [5]. The factor like altitudinal difference changes the human lungs capacity among people of all stages [6,7].

Objective of the study
To compare the resting heart rate, vital capacity and peak expiatory flow rate between rural students of West Bengal and Western Uttar Pradesh.

2. METHODOLOGY

2.1 Subjects
Sixty (60) school boys of Tantulmuri Mahammad M MSK in Tentulmuri, Kharagpur - II block, Paschim Medinipur district, in West Bengal state (W.B) and sixty (60) school boys of St. Marys Inter College in Rataul, Khakra block, Baghpat district in Western Uttar Pradesh state (W.U.P) were randomly included in this study. The subject’s age ranged from 12 to 16 years (Class 6th-8th standard). The selected areas of West Bengal and Western Uttar Pradesh were being located at remote rural area in India.

2.2 Measurement
To measure the resting heart rate (RHR), vital capacity (VC) and peak expiatory flow rate (PEFR) following methods were used.

Resting Heart Rate
The heart beat/minute (bpm) was counted over the carotid artery after 30 minute full rest. The one minute duration was determined by stopwatch.

Vital Capacity
Vital capacity was measured by Wet Spirometer. This instrument was 6 liter container, filled with water upto 1 inch from the top and was counter balanced by a chain, which passed over free running pulley. It was placed on a table. The participant took deep breath as much as possible, then he placed the mouth piece in between his lips and breathed out gradually and consistently until the most extreme volume of air was ousted, without taking another breath. During breath out it was confirm that the exhaled air not escape through the nose and other sides. Dial of the spirometer was followed to record the data, within three appropriate trails highest score was recorded in milliliter (ml).
Peak Expiatory Flow Rate
Peak Expiatory Flow Rate was measured by Wrights Mini Peak Flow Meter. The participant was held the instrument in his hands and the mouth pieces was properly placed in between his lips followed by deep breath as possible. Then breath out forcefully within the mouth piece after maximum inhalation. During breath out it was confirm that the air not escape through the nose and other sides. Within three appropriate trails highest score was recorded in litre/minute (l/min).

Anthropometric Variables
The weight in kg was measured by a standard weight machine, with subject’s shoes removed and weared minimum clothes. The height in mt was measured by stadiometer, with subject’s shoes removed and feet and the buttocks attached together, then upper back and back of the head makes firm attached against the stadiometer. Body Mass Index was measured by using the formula Weight (Kg) / Height (mt)^2.

2.3 Statistical Analysis
The independent t-test was used to analyze the data and level of significant was set at P<0.05. The software Microsoft Office Excel was used to calculate the data.

3. RESULT & DISCUSSION
The W.U.P. school boys were taller (t = 6.07, p = 0.00) than the W.B school boys and their weight was not significantly difference (t = 1.17, p = 0.24). The body mass was also not significantly difference (t = 1.10, p = 0.27) between them. Their Anthropometric characteristics was shown in table – 1. The statistical implication and result of resting heart rate (RHR), vital capacity (VC) and peak expiatory flow rate (PEFR) was shown in table-2.

Table – 1
Comparison of Anthropometric Characteristics between School Boys of W.B. & W.U.P.

<table>
<thead>
<tr>
<th>Variable, BMI value</th>
<th>W.B (n=60)</th>
<th>W.U.P (n=60)</th>
<th>T- value</th>
<th>P- value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (Kg)</td>
<td>41.95</td>
<td>43.32</td>
<td>0.17</td>
<td>0.86</td>
</tr>
<tr>
<td>Height (mt)</td>
<td>1.45</td>
<td>1.47</td>
<td>6.07</td>
<td>0.00</td>
</tr>
<tr>
<td>BMI kg/m^2</td>
<td>20.00</td>
<td>20.00</td>
<td>1.10</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Table -2
Comparison of RHR, VC, PEFR between School Boys of W.B. and W.U.P.

<table>
<thead>
<tr>
<th>Variables</th>
<th>W.B. (n=60)</th>
<th>W.U.P. (n=60)</th>
<th>T-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHR</td>
<td>75.58</td>
<td>74.33</td>
<td>1.58</td>
<td>0.11</td>
</tr>
<tr>
<td>VC</td>
<td>2466.66</td>
<td>2618.33</td>
<td>2.05</td>
<td>0.04</td>
</tr>
<tr>
<td>PEFR</td>
<td>262.83</td>
<td>244.5</td>
<td>2.10</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Abbreviation- W.B = West Bengal School Boys, W.U.P. = Western Uttar Pradesh School Boys

The study suggested for same type of study on large sample and also suggested for further study of comparison between different latitude and air pollution on lungs function among different age group people.

5. REFERENCES


