STATISTICAL STUDY ON THE ANTHROPOMETRIC PROFILE OF THE 5TH GRADE PUPILS

Article DOI : https://doi.org/10.35219/efms.2018.2.04

CIUBOTARU MIHAI¹, LEUCIUC FLORIN²

¹State University of Physical Education and Sports, Chisinau, Rep. Moldavia
²Stefan cel Mare University of Suceava, Romania

Abstract

This study represents the anthropometric evaluation of the 5th grade students from Liceul Tehnologic "Iorgu Vârnav Liteanu", Liteni, Suceava.

For this study, we researched the theoretical ideas of the experts in the somatic evaluation domain, we estimated the development degree of the students' functional capacity and we initiated a structure of procedure typical to the anthropometric measurements of the 5th grade students.

The aim of this experimental study regarding the anthropometric profile of the 5th grade pupil, through applying some measurements of the human body, is identifying the results of the two measurements, the initial and the final, their comparison and recommending some methods and ways of somato-functional development in physical education and sports games pointing to the development of an ideal shape of the human body depending on the age and sex characteristics.

Key words: pupils, secondary school, measurements.

1. Introduction

Children development is one of the human biology problems of great theoretical and practical importance. As there are extremely numerous data in this domain, new research works are opening up, among which the acceleration phenomenon, so much disputed nowadays, emphasising the complexity of the problems. Instruments used for measurements in this domain are: the dynamometer, the metric tape, the compass, the mobility scale, etc.

After the growth period, children can be considered adults as they reach a somato-vegetative and psychological maturation and the body exhibits fundamental differences and significant neuro-hormonal lability. Irregular growth and development with temporary exacerbations of neuro-vegetative and psychological processes, the child's growing age is divided into several periods, with particular morpho-functional and psychic aspects. All the growth and development periods are important; a special denotation has the prepubescent stage in which the child turns into an adult. Puberty is a different time period for both girls and boys relative to hereditary or environmental factors.

Between 1970 and 1980, the project "The Biomotric Potential of the School Population" was launched, with Alexandra Fosneanu, Virgil Mazilu, Virginia Paraschiv and Nicu Alexe (coordinator) taking part in the assessment of health status, waist evolution, children's weight and the development of motor skills in close connection with the biological and functional substrate.


So far, for the school year 2016-2017, its pilot phase has been carried out to highlight the possibilities of applying anthropometric measurements and functional movement tests as well as data collection.

Anthropometry - Measurement (Greek, 'metron' - measure), dimensions of the human body.

"All actions aiming at correlation between the measurement of the subject or the measured phenomenon (skills, skills, driving qualities) and the unit of measurement, by applying control samples, in order to collect results or data, in order to know as precisely as possible the effects of practicing physical exercise and, in general, behavior of subjects in physical education or sports "(A. Dragnea, 1984).
Definitions of measurement:

- the conceptual and empirical operation by assigning values to the parameters of objects and processes;
- the assignment process, according to strict rules of an 'imprecise' number of the measure of a characteristic;
- the process by which the quantitative determination of a characteristic is reduced.

M. Epuran defines measurement as “the process of assigning numbers to the properties of objects (individuals, phenomena) according to certain principles, so that numerical relations represent the relevant relations between objects”.

From the point of view of the relation between the objects and the phenomena measured, there are the following categories:

- direct - comparison of the measurement size with the unit of measurement;
- indirect - to find a value by using a formula and introducing the results obtained by direct measurement.

2. Material-method

The study cannot be completed without a profound documentation, carried out by the study of the specialized papers dealing with the anthropometric measurements of Romanian and foreign authors. The participant are 5th grade pupils from Liceul Tehnologic "Iorgu Vârnav Liteanu" Liteni, Suceava, in a total of 14 participants, 6 girls and 8 boys. The measurements used for the experiment were carried out in the high school gym.

There were six tests which covered the following: height (cm), weight (kg), trunk height (cm), abdominal perimeter (cm), arm span (cm) and sole length (cm).

The methods used were the following:

- analysis of the specialized literature or the bibliographic documentation method;
- pedagogical observation;
- statistical-mathematical method;
- the graphical method.

Analysis of the specialized literature / bibliographic documentation method - knowledge by studying the literature specialized in the field of somatic evaluation, examination of some scientific papers.

Observation is an organized and continuous process that allows us taking some results. The data obtained through observation allow us to form a rapid opinion about the individuals themselves.

Anthropometric Measurement Method. We used the following anthropometric measurements: height, weight, height of the bust, abdominal perimeter, arm span, foot length to assess the morphological type and the physical development degree of students.

The statistical - mathematical method meant the systematic collection of the parameters obtained on the subjects, leading to certain calculations for determining the results in order to analyze whether the subject under investigation is within the normal limits or below /above the normal limit.

The graphical method was designed to estimate in full graphical representations the data obtained by anthropometric measurements, to establish the results and differences between the subjects of the fifth grade research.

3. Results and discussions

The measurement values (initial and final) made of subjects (male and female) are shown in tables 1-4.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Height</th>
<th>Body weight</th>
<th>Bust height</th>
<th>Abdominal perimeter</th>
<th>Arm span</th>
<th>Foot length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A.I.</td>
<td>155</td>
<td>38</td>
<td>79</td>
<td>62</td>
<td>147</td>
<td>23</td>
</tr>
<tr>
<td>2.</td>
<td>M.S.</td>
<td>140</td>
<td>33</td>
<td>74</td>
<td>58</td>
<td>137</td>
<td>21</td>
</tr>
<tr>
<td>3.</td>
<td>P.I.</td>
<td>147</td>
<td>34</td>
<td>74</td>
<td>56</td>
<td>141</td>
<td>22</td>
</tr>
<tr>
<td>4.</td>
<td>P.G.</td>
<td>150</td>
<td>41</td>
<td>77</td>
<td>65</td>
<td>149</td>
<td>22</td>
</tr>
<tr>
<td>5.</td>
<td>P.M.</td>
<td>151</td>
<td>42</td>
<td>67</td>
<td>63</td>
<td>149</td>
<td>23</td>
</tr>
<tr>
<td>6.</td>
<td>S.D.</td>
<td>145</td>
<td>37</td>
<td>75</td>
<td>62</td>
<td>147</td>
<td>23</td>
</tr>
<tr>
<td>$\bar{X}$</td>
<td>15</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>12</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>$X$</td>
<td>148</td>
<td>37,5</td>
<td>74,33</td>
<td>61</td>
<td>145</td>
<td>22,33</td>
<td></td>
</tr>
<tr>
<td>$+/S$</td>
<td>5,21</td>
<td>3,61</td>
<td>4,08</td>
<td>3,34</td>
<td>4,89</td>
<td>0,81</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 - Initial measurement, girls, 5th grade, median age 11 years
The statistical and mathematical indicators used to process the data obtained from the measurements for the two tests are presented in tables 5 and 6.
Table 6 - Average class final measurement

<table>
<thead>
<tr>
<th></th>
<th>Height</th>
<th>Body weight</th>
<th>Bust height</th>
<th>Abdominal perimeter</th>
<th>Arm span</th>
<th>Foot length</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_0$</td>
<td>8,5</td>
<td>12</td>
<td>7,5</td>
<td>14</td>
<td>15,5</td>
<td>2,5</td>
</tr>
<tr>
<td>$X$</td>
<td>152.87</td>
<td>42.08</td>
<td>75.68</td>
<td>65.37</td>
<td>151.54</td>
<td>23.43</td>
</tr>
<tr>
<td>+/-S</td>
<td>3,13</td>
<td>4.47</td>
<td>2.54</td>
<td>5.63</td>
<td>5.43</td>
<td>0.81</td>
</tr>
<tr>
<td>Cv%</td>
<td>2.04</td>
<td>10.63</td>
<td>3.36</td>
<td>8.61</td>
<td>3.57</td>
<td>3.43</td>
</tr>
</tbody>
</table>

By comparing the results obtained at the initial measurement with the results from the final measurement it is observed in the above representation that the height has an increase of 12.71 cm, the weight increases by 4.15 kg, bust height increases by 0.71 cm, the abdominal perimeter increases 3.87 cm, the arm span increases by 4.54, and the foot length has an increase of 0.96 cm (figure 1, table 7).

Figure 1 - Initial and final class average measurement

Table 7 - Mean initial and final measurement girls and boys

<table>
<thead>
<tr>
<th>F/M</th>
<th>Height</th>
<th>Body weight</th>
<th>Bust height</th>
<th>Abdominal perimeter</th>
<th>Arm span</th>
<th>Foot length</th>
</tr>
</thead>
<tbody>
<tr>
<td>m1</td>
<td>girls</td>
<td>148</td>
<td>37.5</td>
<td>74.33</td>
<td>61</td>
<td>145</td>
</tr>
<tr>
<td>m2</td>
<td>152.5</td>
<td>42.16</td>
<td>75</td>
<td>65</td>
<td>149.83</td>
<td>23</td>
</tr>
<tr>
<td>m1</td>
<td>boys</td>
<td>132.33</td>
<td>38.37</td>
<td>75.62</td>
<td>62</td>
<td>149</td>
</tr>
<tr>
<td>m2</td>
<td>153.25</td>
<td>42</td>
<td>76.37</td>
<td>65.75</td>
<td>153.25</td>
<td>23.87</td>
</tr>
</tbody>
</table>
By comparing the results obtained at the initial measurement with the results from the final measurement it is observed in the above representation that the height has an increase of 4.8 cm, the weight increases by 4.66 kg, bust height increases by 0.67 cm, the abdominal perimeter increases 3.87 cm, the arm span increases by 4.83, and the foot length has an increase of 1.33 cm (figure 2 and 3, table 7).

By comparing the results obtained at the initial measurement with the results from the final measurement it is observed in the above representation that the height has an increase of 20.99 cm, the weight increases by 3.63 kg, bust height increases by 0.75 cm, the abdominal perimeter increases 3.75 cm, the arm span increases by 1.25, and the foot length has an increase of 1.25 cm (figure 2 and 3, table 7).

4. Conclusions
As a result of the research we found significant differences between the initial measurement and the final one, which is encouraging, the children should develop harmoniously. Students had a positive response to anthropometric measurements and participated conscientiously and actively.

Taking into account the more obvious development of psychomotor skills in final testing, it helps pupils get higher, sometimes maximum, grades and pass the exams.

This can be an incentive for students to practise physical exercise in an organized setting, and those willing to move have the opportunity to put into practice what they have learned at school and in their free time.

Maintaining an optimal state of health, practising physical exercise in an organized setting, but also in free time, developing motor skills all lead to a healthy and well-developed body.

References
3. http://www.academia.edu/29066778/APLICAREA_ANTROPOMETRIEI_%C3%8EN_PROIECTAREA_ER_GONOMIC%C4%82;