

ANTHROPOMETRY, PHYSICAL ABILITY AND DISPENSARY OBSERVATION OF SCHOOL-AGE CHILDREN - CONTRIBUTION TO HEALTH PREVENTION AND PUBLIC HEALTH

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ABSTRACT

INTRODUCTION: Morphological /anthropometric/ indicators are the basis for assessing the physical growth of children of school age, the relevant organs and the whole body. External factors affect growth and development, especially during puberty. We set ourselves the task to analyze anthropometric studies of students in organized groups in Varna - on height, body weight, activity, and their dispensary observation by ICD for a period of two years - 2012 – 2014.

MATERIALS AND METHODS: We have used reports, analyses, tests, data from prophylactic examinations and dispensary, anthropometric measurements, laboratory tests of RHI Varna, examination of physical abilities and more. Our methods included documentary, statistical, laboratory tests, physical abilities and more.

RESULTS: We explored the physical development of 80 771 students in organized groups in Varna - 33 669 for the 2012-2013 school year and 42 918 for 2013-2014, divided into three groups: first group – norm, second group - extended norm and third group - outside the norm. We analyzed the physical abilities to pass and not pass the tests for norm and out of norm and the ones free from physical education and remedial gymnastics.

CONCLUSIONS: The share of anthropometric measurement of height and weight within the norm is highest in schoolchildren in group I (norm) - 87.0% for a height and 84.0% for a bodyweight. However, it is significantly lower in group II (extended norm) - 8.57% for height and 9.85% for body mass. The detected and registered main diseases and abnormalities in prophylactic examinations were: obesity, visual disturbances, spine curvature disorders, and asthma.

Keywords: anthropometric research, ability, dispensary observation, height, weight, physical development

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INTRODUCTION

The main morphological /anthropometric/ indicators are the basis for assessing the physical development of the body and the whole organism. External factors have an impact on growth and development, especially during puberty. The process of growth and development changes the hormonal background of the body. The impact of endogenous /genetic/ factors in school age also contributes to qualitative changes. This calls for appropriate measures and effective medical supervision to strengthen the body (1,2,3,4).

AIM

We set ourselves the task to analyze anthropometric studies on students in organized groups in Varna - height, body weight, activity, and their dispensary observation by ICD for period of two years - 2012 - 2014.

MATERIALS AND METHODS

We have used reports, analyses, tests, data from prophylactic examinations and dispensary, anthropometric measurements (81 schools for 2013 and 99 for 2014 of a total 139 - average 65%), laboratory tests of RHI Varna, examination of physical abilities and more. Methods: documentary, statistical, laboratory tests, physical abilities and more.

We have performed an analysis of the physical development of students and their morphological characteristics - height and body mass.

We have studied the physical development index height of 80 771 school children in organized

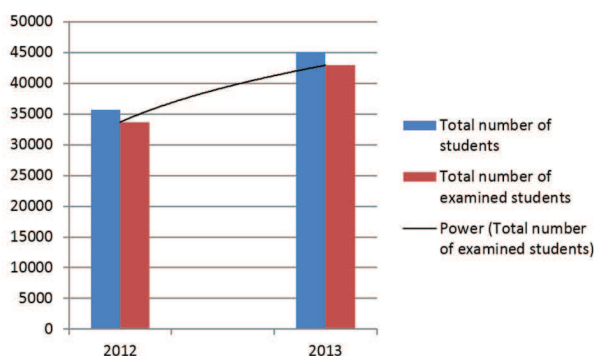


Fig. 1. Total number of students and the number of performed anthropometric studies in Varna for academic years 2012/13 and 2013/14

groups in Varna (for 2012/2013 - 33 669 and for 2013/2014 - 42 918) based on individual assessment of anthropometric indicators in three groups: first group - norm, second group - extended norm, third - out of the norm. The anthropometry study for the two years covered - 94.8%. The difference between the first and second year is insignificant - 94.4% against 95.13%. Fig. 1 shows the total number of the studied anthropometry data of students by year.

The index height in Fig. 1 shows the total student number and the number of performed anthropometric studies in Varna for 2012/13 and 2013/14.

The average percentage of students in the first group - norm is 87.0%, for the first year it is 88.0% and 84.7% for the second ($P < 0.05$). The assessment of height for the 2012/13 academic year is divided as follows: group I - 88.0%, group II - 9.0%, group III - 3% (Fig. 2). During the 2013/14 academic year the covered by the survey students were 42 918 (95.13% of the total number of the subjects of study). The distribution in the three groups was as follows: group I /norm/ - 38 237 - 84.7%, group II / extended norm / - 3 595 - 7.9%, group III /out of norm/ - 1 086 - 2.41%.

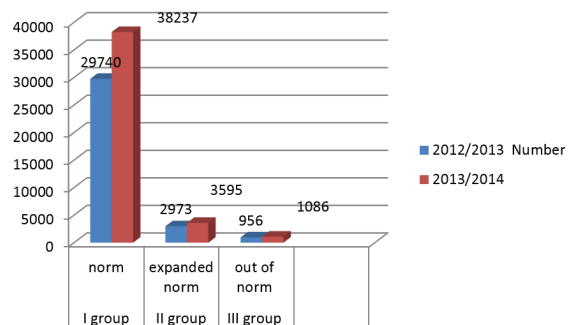


Fig. 2. Number of anthropometric studies on the height of students from Varna for the period 2012-2014

In 2013/14 the share of those with growth delay when it comes to height is greater in students from 7 to 14 years old - more than 3.7 times (362 students), compared to boys and girls aged 14 to 18 years - 96 students.

The natural, physiological basis of a healthy body is weight. Its study is important for creating regimens and programs for adolescent students to meet the current requirements of the educational

process (5). Fig. 3 shows a study on body mass and the percentages in each group. The average share (in %) of students within the norm in the first group is 84.0% (85.7% for 2012/13 and 82.3% for 2013/14). For the second group extended norm the average is 9.85% (10.3% for 2012/13 and 9.4% for 2013/14). Students with obesity are 2 times more than underweight students.

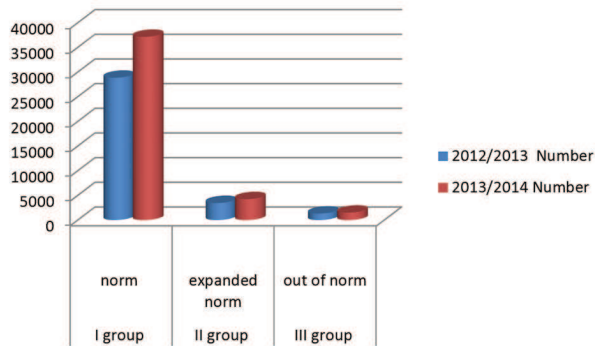


Fig. 3. Anthropometric studies - body mass of students in Varna for the period 2012 - 2014

Physical activity in school age, during puberty, plays an important role in the prevention of osteoporosis in adulthood, helping to increase bone mass. It contributes to the improvement of mental functioning, as well as overall health and self-esteem (6,7). Figure 4 shows the number of students who passed and did not pass the tests of physical ability. The assessment of those who have covered the norms is: 94.0% for the first year and 93.8% for the second year, while those who did not cover the norms are few - 6.0% and 6.2%, accordingly.

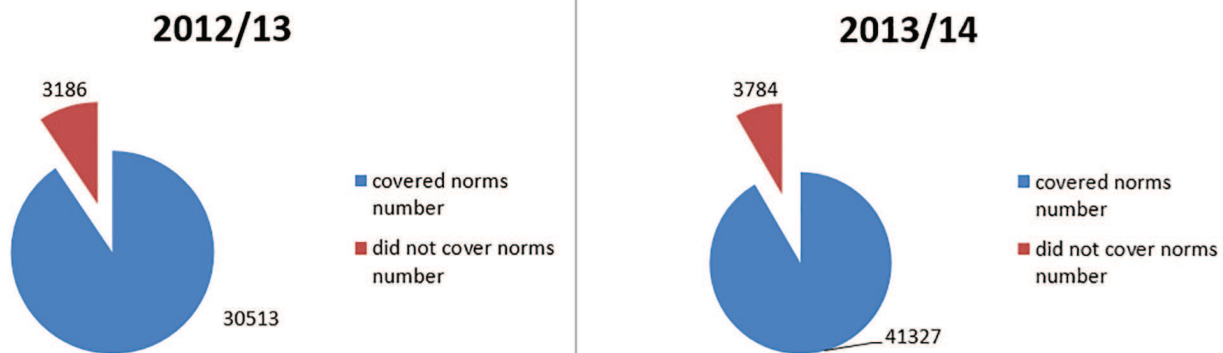


Fig. 4. Physical abilities of students in Varna for the period 2012-2014

The study also includes students exempted from physical education and those of remedial gymnastics.

Indirect assessment of the physical development of students is done through medically controlled growth and development via periodic preventive examinations based on the age. (Ordinance No. 39/2004, State Gazette, issue 106, annex 1) (1,2).

The most common impairments in the physical development of students were as follows: obesity 2011 - 1236 students, 2012 - 1288 students, 2013 - 1632 students; spinal curvature for 2011 - 886 students, 2013 - 556 students.

ICD dispensary observation of students for the academic year 2013/14 included a total number of 1936. The leading disease was asthma (J 45.0-1) - 453 students. Students aged 7 to 14 years were 378 and 5 times more than those in the age group 14-18 years - 75. In second place among students is a decrease of vision in both eyes - (H 54.2) - 430 cases. And for this condition, the number of students from 7 to 14 years of age is 368 and is 6 times higher than that at those aged 14-18. Cases of epilepsy are at third place (G 40.0-8) - 123 students. The total number of girls (68) is higher than that of boys (55). Fourth place is for allergic rhinitis caused by pollens (J 30.1) - 89 students. The number by sex and age is the same for both groups 1084.

Registered diseases and abnormalities in the main prophylactic examination of students at a distribution of 95% over the past three years shows that the number of students with obesity increases - 1362 (for 2011- 1236, for 2012 - 1288 and for 2013 - 1362 cases). The incidence of obesity in first grade is 9%,

while for seventh graders it is 12%. The lowest rate is the indicator for tenth grade - 6%. Obesity in the first and seventh grade has increased in comparison to the previous year, while in tenth grade no change was detected. In second place are the cases of visual disturbances - 670 cases. The largest share of these diseases is in seventh grade - 85 (12%) and the lowest in first grade - 57 (8%). The number of students who have spinal curvature continues to decrease - from 886 in 2011 to 556 in 2013. This disease continues to be in third place for a second year. In fourth place are registered cases of asthma - 653 newly diagnosed. Of these, the largest number of students with asthma are in first grade - 63 and the lowest - in tenth grade - 39 cases. With the increase of age, the frequency and the proportion of asthma is reduced, which is characteristic for the development of the disease.

DISCUSSION

Parents and educators should be informed regularly about the benefit of medical check-ups and the need for eyesight to be examined once a year by a specialist, as well as how to maintain correct posture during lessons.

CONCLUSIONS

1. The share of anthropometric measurement of height and weight within the norm is highest in schoolchildren in group I (norm) - 87.0% for a height and 84.0% for a bodyweight. It is significantly lower in group II (extended norm) - 8.57% for height and 9.85% for a body mass and for group III (outside the norm) - 2.66% for height and 3.7% of body weight (at the expense of values above the norm for height /higher height/ and above the norm for weight /high body mass/).
2. The results show that those who have covered the norms are: 94.0% for the first year and 93.8% for the second year, while the share of those who have not covered the norms is small - 6.0% and 6.2%, accordingly.
3. Detected and registered main diseases and abnormalities in prophylactic examinations: obesity, visual disturbances, spine curvatures, asthma.

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