2023

ROSTOV-ON-DON , RUSSIA

МЕЖДУНАРОДНАЯ НАУЧНО-ПРАКТИЧЕСКАЯ КОНФЕРЕНЦИЯ

СОВРЕМЕННЫЕ НАУЧНЫЕ РЕШЕНИЯ АКТУАЛЬНЫХ ПРОБЛЕМ

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Международная научно-практическая конференция Современные научные решения актуальных проблем. Сборник тезисов научно-практической конференции г. Ростов-на-Дану 2023 г. (Типография Аспект)
Part-4.
August December 2023
https://orcid.org/0000-0001-6156-3630
DOI https://doi.org/10.5281/zenodo.8435925

Functional state of cardiovascular system of school children

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Annotation. Violation of the rules of a healthy lifestyle (hypodynamia, poor nutrition, high workload, non-observance of the daily routine, bad habits, etc.) has a negative impact on the functioning of the leading organs and systems of the body, so the effectiveness of any health and corrective measures largely depends on the possible earlier start of their carrying out [1, 2, 4, 5]. As indicators characterizing the functional state of CVS, heart rate (HR) and blood pressure level (systolic and diastolic) were used at rest and during dosed physical exercise. Functional studies were conducted in schoolchildren of the schools №29 and 249 in Tashkent.

Key words: school children, cardiovascular system, heart rate

Results and discussion. We provided a study of the age dynamics of the leading functional indicators of the cardiovascular system (CVS) of children and adolescents, and an assessment of the level of adaptive capabilities. The research results showed that the pulse rate in boys of all ages of the compared schools did not have statistically significant differences, gradually decreasing from 93.0 ± 0.6 - 93.4 ± 0.7 in 7 years to 83.4 ± 0.7 - 85, 9 ± 1.3 at 16 years of age. The most noticeable decrease in heart rate in the boys examined in the school 249 was noted at the age of 15-16 years, in boys of the school 29 - at 13-14 years. The data on the measurement of the pulse in schoolgirls reveals a particular interest. In most age groups, girls had a more regular heart rate than boys. In girls, in the school 249 aged 7 to 16 years, the heart rate fluctuated from 95 ± 1.3 to 88.1 ± 2.4, from 95 ± 0.7 to 84.9 ± 1.0 in the school 29. Unlike boys, the girls of the compared groups are characterized by a wave-like decrease in heart rate. Girls from the school 249 aged from 7 to 10 years old initially have a slowing heart rate from 95 to 92 beats. in minutes, and then by 11-12 years, the heart rate rises to 93.2 beats. in minutes. From 12 to 16 years, the pulse gradually decreases to 88.1 beats. in min., and remains within the age limits. Girls in the school 29 had a different picture: at the beginning, there is a slight decrease in heart rate (from 95 beats per minute at seven years old

to 93 beats per minute at nine years old). Up to 11 years, the pulse rate is kept at this level. Then, from 12 to 16 years, girls of the school 29, like their peers in the school 249, had a pulse rate of 84.9 beats. in minutes and remains within the age limits.

We studied the reaction of students' CVS to dosed physical activity (20 squats in 30 seconds). Comparing the pulse in schoolchildren of both groups, it can be noted that after exercise this indicator increased approximately equally in almost all the studied age-sex groups: by 25.2 and 25.0%, 22.3 and 23.2%, respectively, in boys and girls compared schools. The exception was the age group of 16-year-old boys and girls: in the boys of the 249th school, against the background of lower indicators, a significant increase in the pulse rate was noted in comparison with the boys of the 29th school (107.7 ± 0.9 and 103.4 ± 1.9, respectively, $p < 0.05$) and a tremendous value of DBP (80.8 ± 1.1 and 77.1 ± 0.8, $p < 0.05$). In girls of 249 schools at the age of 16, a significantly lower (in comparison with the girls of 29 schools) value of SBP (118.2 ± 0.8 and 120.6 ± 0.8, respectively) and a lower heart rate (103.4 ± 1, 2 and 107.5 ± 0.6).

The pulse recovery time in most of the boys of the compared groups examined by us was 60 sec. In a significant number of girls in both groups, recovery ends in the 3rd minute. This indicates functional inferiority and low adaptation of the body to physical activity. An assessment of the level of adaptive capabilities of CVS indicates that only 79.9% of boys and 40.6% of girls in 249 schools had a satisfactory level of adaptation of CVS. Pressure, unacceptable level and failure of adaptation were determined in 18, 1.9 and 0.2% of cases among boys and 40, 17.5 and 1.2% among girls in the school 249. However, a similar orientation of adaptation processes was also noted among schoolchildren at school 29: differences in the indicators of the adaptive capacities of children in the compared schools were not reliable.

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