Purpose The aim of the present study was to evaluate the determinants of gas exchange in smoking and nonsmoking teenagers during an incremental exercise test.

Materials and Methods One hundred and fifty healthy Bulgarian school children in the age span 15 – 17 years took part in the study. All participants completed anthropometric measurements – standing height, weight and BMI and a questionnaire about smoking habits. The studied group performed an incremental exercise test on a treadmill following a modified Balke protocol.

Results Near 90% of participating teenagers completed the exercise test to end. Boys showed significantly higher values of oxygen consumption on different levels of the test and maximal oxygen consumption - VO2 peak mL.min-1 = 2287 ±337 vs. 1702±278; p<0.001. In the studied population, smokers had slightly lower values without a significant difference - VO2 peak mL.min-1 = 1777±288 vs. 1851±417; NS. VO2 increases with age and correlated best with weight (R=0.83) and height (R=0.65) but less with BMI (R=0.59). Ventilatory equivalents for O2 and CO2(Ve/VO2, Ve/VCO2) decline with age. Girls in comparison with the boys had greater fatigue perception ( Borg scale) during the incremental test.

Conclusions The anthropometric parameters were the best determinants of physical capacity in teenagers. Smokers showed slightly lower but not significant values for VO2 peak. Boys had significantly higher values for VO2 peak compared with girls.

Materials and Methods

The City children’s clinic of 1611 disabled children of the State Budget Agency of Health of the Republic of Komi (Suppl 3):A1 – 2018. Among the main disorders the following was identified: 1) Mental, of which perception, attention, memory, thinking, intelligence, consciousness, behavior, psychomotor functions, and other functions; 2) Language and speech, of which speech disorders (rhinolalia, dysarthria, alalia, a phasia), writing disorders (dysgraphy, dyslexia), disorders of verbal and non-verbal speech, voice disorders, and other violations of language and speech functions; 3) Sensory, of which sight, hearing, smell, touch, taste, pain, temperature and other types of sensitivity; 4) Statodynamic, including violations of the motor functions of the head, motor functions of the body, motor functions of the limbs, statics, coordination of movements; 5) Organs and systems, including blood circulation, respiration, digestion, excretion, blood formation, metabolism and energy, internal secretion, immunity; 6) Violations caused by physical deformity, of which lead to external deformity (deformation of the head, head, torso, limbs), abnormal digestive, urinary, respiratory tracts, violation of body size; 7) General and generalized.

The number of disabled children in the city children’s clinic in 2011–2018 increased in absolute terms by 95 people with a growth rate of 157.23%; the incidence of patients with disabilities increased 1.34 times to 159.92 per 10,000 contingent of children and adolescents.

According to the specific weight, among the main disorders in the state of children’s health were: statodynamic - 35.34 ±3.11% over the pathology of organs and systems 28.47 ±2.93%, mental 16.62±2.41%, sensory 13.10±2.19%, language and speech 5.49 ± 1.48% (all p<0.001), general and generalized 0.56±0.49%, t=1.143 and disorders due to physical deformities 0.42 ± 0.42%, t=1.000.

With a total disability rate of 159.92 per 10,000 patient populations, it was divided between 7 main disorders of the body’s functions: static-dynamic - 55.76%; organs and systems - 43.50%; psychic - 34.31%; sensory - 16.54%; language and speech - 8.58; general and generalized - 0.61 and disorders due to physical deformities - 0.61 per 10,000 patients.

Indicators of major impairments in the health status of children with disabilities are used as a daily statistical tool for objectifying the process of rehabilitating patients and identifying the strengths and facilities of a medical institution for the successful implementation of an individual program of rehabilitation/habilitation of a disabled person.

The analysis of the main violations of functions in the state of 1611 disabled children of the State Budget Agency of Health of Republic of Komi ‘ Syktvykar children’s clinic’[3] was conducted on the basis of medical documentation in 2011–2018.

Seven major violations of functions in the state of health of children with disabilities were identified: 1) Mental, of which perception, attention, memory, thinking, intelligence, consciousness, behavior, psychomotor functions, and other functions; 2) Language and speech, of which speech disorders (rhinolalia, dysarthria, alalia, a phasia), writing disorders (dysgraphy, dyslexia), disorders of verbal and non-verbal speech, voice disorders, and other violations of language and speech functions; 3) Sensory, of which sight, hearing, smell, touch, taste, pain, temperature and other types of sensitivity; 4) Statodynamic, including violations of the motor functions of the head, motor functions of the body, motor functions of the limbs, statics, coordination of movements; 5) Organs and systems, including blood circulation, respiration, digestion, excretion, blood formation, metabolism and energy, internal secretion, immunity; 6) Violations caused by physical deformity, of which lead to external deformity (deformation of the face, head, torso, limbs), abnormal digestive, urinary, respiratory tracts, violation of body size; 7) General and generalized.

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