

**Григорій Васильчук,**

аспірант кафедри теорії та методики фізичного виховання  
факультету фізичного виховання, спорту і здоров'я,  
Національний педагогічний університет імені М. П. Драгоманова (м. Київ, Україна)

**Hryhoriy Vasylychuk,**

postgraduate of the department theory and methods of physical education  
of the Faculty Physical Education, Sports and Health,  
National Pedagogical University Drahomanov (Kyiv, Ukraine)  
*tanya.bublely@ukr.net*  
ORCID 0000-0002-5817-2820

**УДК: 37.092.213:38]:786.014.37**

## **ВПЛИВ ФІЗИЧНОЇ ПІДГОТОВЛЕНОСТІ ДІВЧАТ 11-15 РОКІВ ІЗ ПОРУШЕННЯМИ ПОСТАВИ НА ФОРМУВАННЯ КУЛЬТУРИ РУХІВ**

**Анотація.** У статті розглянуто особливості рівня фізичної підготовленості дівчат 11-15 років, які мають порушення постави, та його вплив на формування культури рухів. Проведено порівняльну характеристику показників рухової підготовленості дівчат із порушеннями постави та без порушень постави. Досліджено вплив рухової активності на формування правильної постави та поліпшення стану фізичного здоров'я. Проаналізовано зміст поняття «порушення постави» та встановлено, що постава є важливим комплексним показником стану здоров'я і гармонійного фізичного розвитку кожної людини. Правильна постава забезпечує оптимальне положення і нормальну діяльність внутрішніх органів, створюючи найкращі умови для діяльності всього організму. Визначено, що в дівчат із порушеннями постави показники фізичної підготовленості значно нижчі, аніж у їхніх однолітків без вад постави.

З'ясовано головні причини, які сприяють розвитку гіподинамії з-поміж учнівської молоді, що негативно впливає на стан їхньої постави. Підкреслено, що варіанти розв'язання цієї проблеми можливі за рахунок інтенсивного використання всіх засобів фізичної культури. Установлено достовірну відмінність між рівнем фізичної підготовленості учениць основної школи з різним розвитком постави.

Підсумовано, що більшість учениць основної школи мають малорухливий спосіб життя, що негативно позначається на їхньому психоемоційному та соматичному стані, як наслідок, простежується низький та помірний рівні фізичної підготовленості. Тому ця проблема потребує пошуку нових способів і методів профілактики та усунення порушень опорно-рухового апарату в період розвитку дитячого організму з урахуванням їх фізичної підготовленості, статеві-вікових, антропометричних, психологічних та індивідуальних особливостей.

**Ключові слова:** фізичне виховання, учениці, основна школа, порушення постави, фізична підготовленість.

## **THE INFLUENCE OF PHYSICAL FITNESS OF GIRLS 11-15 YEARS OLD WITH POSTURAL DISORDERS ON THE FORMATION OF MOVEMENT CULTURE**

**Abstract.** The article examines the peculiarities of the level of physical fitness of girls aged 11-15 who have postural disorders. A comparative characterization of the indicators of motor readiness of girls with and without postural disorders was also carried out. The influence of motor activity on the formation of correct posture and improvement of physical health was studied. The content of the concept of "posture disorders" was analyzed and it was established that posture is an important comprehensive indicator of the state of health and harmonious physical development of each person. And the correct posture ensures an optimal position and normal activity of internal organs, creating the best conditions for the activity of the entire body. It was determined that the physical fitness indicators of girls with postural disorders are significantly lower than those of their peers without postural disorders.

The main reasons that contribute to the development of hypodynamism among schoolchildren, which negatively affects their posture, have been clarified. A reliable difference was established between the level of physical fitness of elementary school students with different posture development. It is emphasized that options for solving this problem are possible due to the intensive use of all means of physical culture.

It was concluded that the majority of elementary school students have a sedentary lifestyle, which negatively affects their psycho-emotional and somatic state, and as a result, low and moderate physical fitness is observed. Therefore, this problem requires the search for new ways and methods of prevention and elimination of damaged locomotor apparatus during the child's development, taking into account their physical fitness, mortality, anthropometric, psychological and individual characteristics.

**Keywords:** physical education, schoolgirls, primary school, posture disorders, physical fitness.



## INTRODUCTION

**The problem formulation.** Currently, there is an increase in the number of elementary school students with postural disorders. At the same time, there is a low percentage of children who take responsibility for their health, are aware of its value and possess methods of a healthy lifestyle and formation of correct posture among teenagers.

It is known that the comprehensive harmonious development of the personality is ensured by adequate motor activity, it is one of the main factors determining the level of health of young people. At the same time, it was noticed that taking into account the interests of students when choosing motor loads increases their motivation for physical culture and health activities in the conditions of sectional work and independent physical exercises.

Defective posture creates conditions for the manifestation of diseases of the spine and other organs of the musculoskeletal system, which lead to disorders of the internal organs. In children with postural disorders, the vital capacity of the lungs is reduced, the excursion of the chest and diaphragm is reduced, which adversely affects the activity of the cardiovascular and respiratory systems. Weakness of the abdominal muscles leads to a violation of the normal activity of the organs of the abdominal cavity. A decrease in the spring function of the spine in children with a flat back contributes to permanent microtraumas of the brain during walking, running and other movements, which negatively affects higher nervous activity, is accompanied by the rapid onset of fatigue, and often headaches (Anikiev, 2012).

It has been established that the following diseases are the most common among primary school students: diseases of the musculoskeletal system (flat feet, scoliotic posture, postural disorders) are 31.4%, diseases of the endocrine system - 29.7%, diseases of the organs of vision - 15.8%, gastrointestinal tract (gastritis, duodenitis, pancreatitis, cholecystitis) – 12.2%, diseases of the respiratory system (bronchitis, sinusitis, bronchial asthma) – 4.1%, diseases of the nervous system (neurosis, vegetative-vascular dystonia) – 3.8% of the cardiovascular system (arrhythmia, congenital heart disease) – 3.2% (Bublei, 2017).

Symmetrical, dosed, systematic load on the muscles of the trunk and limbs during recreational physical education exercises leads to optimal development of antagonistic and synergistic muscles, natural unloading of the vertebral column is carried out, asymmetric work of the intervertebral muscles disappears, conditions for the natural growth of the locomotor system are restored apparatus of girls. In this regard, doing physical exercises is part of a complex program of correction and prevention of postural disorders and morphological asymmetries (Nikolaev, 2004).

The main tasks of physical and corrective exercises for teenagers are as follows: education of correct posture, relief of the spine, improvement of movement coordination, increase of muscle tone and strength, establishment of correct breathing, correction of flat feet, improvement of the function of the cardiovascular and respiratory systems, development of willpower.

**Analysis of recent research and publications.** In the conditions of reforming general school education, the main orientation of which is the focus on the development of the child's personality, there are very significant shortcomings in solving problems and strengthening health. Thus, according to data (Bublei T. A., 2017) in the structure of orthopedic pathology in children, the largest share is foot deformities - 78.9% and posture disorders - 63.2%.

In connection with the violation of the balance between the consumed food, physical activity and rest of a person, special attention is needed for the rational organization of motor activity (Blavt, 2012). A special role in this problem is played by the organization of the movement regime of students of pedagogical specialties, whose studies are associated with little movement activity. Chronic lack of motor activity in the regime of student youth becomes a real threat to their health and normal physical capacity (Sikura, 2015).

It is motor activity that primarily affects the metabolic processes in the human body. In addition, during physical exercises, certain mechanisms are activated in the body, as a result of which the functions of not only the muscles, but also the respiratory, cardiovascular, nervous and digestive systems are strengthened. Thanks to the body's ability to self-regulate, it adapts to changes in the external environment, the body becomes more stable and viable (Yadviga, 2004).

Despite the large number of works devoted to the issue of development and substantiation of modes of motor activity, the relevance of the study is due to the need to rethink the mode of motor activity of students of higher education institutions, taking into account the peculiarities of training.

## THE PURPOSE OF THE RESEARCH

To investigate the level of physical fitness of elementary school girls with postural disorders.

## RESEARCH METHODS

Pedagogical testing to study the physical fitness characteristics of elementary school students with postural disorders; methods of statistical data processing.

## RESULTS OF THE RESEARCH

Posture is the usual posture of a person who is standing casually, acquired without excessive muscle tension: the body and head are kept vertical, the spine forms a smooth wavy line, the contours of the chest protrude forward, the stomach is slightly pulled in, the legs are bent at the hip and knee joints. Normal posture is characterized by six main features:

- location of spinous processes on one vertical line;
- location of upper arms, shoulders at the same level;
- location of the corners of both blades at the same level;
- waist triangles equal to each other, formed by the side surface of the body and freely lowered arms;
- location of gluteal folds at the same level;
- correct curves of the spine in the sagittal plane.



According to the World Health Organization, the health of the young generation cannot be considered healthy. This can be attributed both to indicators of somatic and psycho-emotional health, and moral development of the individual. Currently, the priority area of activity of pedagogical teams during the educational process should be not just teaching children life skills in modern society, but also the imperative preservation and active formation of the child's health.

In order to find out the level of physical fitness of schoolgirls, which affects the formation of correct posture, pedagogical testing of strength, coordination abilities and flexibility of girls aged 11-15 was carried out. A reliable difference between the level of physical fitness of students with different posture development was established.

Thus, the index of strength endurance of the trunk muscles based on the results of lifting the trunk to a sitting position from a lying position in 30 seconds in elementary school girls without posture disorders is  $22.6 \pm 2.8$  times, while in girls with posture defects -  $18.3 \pm 2.4$  times. The indicator of the static strength of the back muscles of healthy girls is  $52.8 \pm 12.1$  s, while that of students with postural disorders is  $31.9 \pm 4.0$  s. The indicator of static balance of elementary school students without postural defects is  $2.7 \pm 0.7$  points, for peers with postural disorders -  $2.2 \pm 0.6$  points.

The indicator of vestibular stability in healthy girls is  $27.9 \pm 7.4$ , in schoolchildren with postural abnormalities -  $21.7 \pm 2.2$  s.

The index of coordination of movements of healthy schoolchildren is  $18.0 \pm 1.3$ , and in girls with postural defects -  $21.9 \pm 1.2$  s and  $17.0 \pm 1.8$  s, respectively. The indicator of manifestation of coordination abilities when changing the position of the body in space according to the Burpee test in healthy students is  $7.4 \pm 0.4$  times, while in peers with postural disorders -  $7.6 \pm 0.4$  times.

It was established that healthy girls have significantly higher indicators of strength and coordination abilities than their peers with posture disorders. Thus, the indicators of static strength and strength endurance, static and dynamic balance, coordination of movements, coordination abilities when changing body position, and integral assessment of coordination abilities according to the relevant index are significantly higher in schoolgirls than in schoolboys with postural defects. Indicators of flexibility and ability to voluntarily relax muscles of healthy girls and those with postural defects do not reliably differ.

The indicator of static balance of schoolgirls who do not have posture defects is  $3.5 \pm 1.1$  points, for girls of the same age with posture disorders -  $2.2 \pm 0.8$  points. As for vestibular stability, this indicator in healthy girls is  $24.4 \pm 7.6$  s; in schoolgirls with deviations in the development of posture -  $20.2 \pm 3.4$  s. It was determined that the indicator of the ability of voluntary muscle relaxation in girls aged 11-15 is the same regardless of the presence of posture disorders and is  $1.7 \pm 0.5$  points. The index of coordination of movements of healthy schoolgirls is  $17.1 \pm 1.5$  s, and for girls with postural defects -  $22.4 \pm 2.3$  s.

It was established that healthy girls have significantly higher indicators of strength and coordination abilities than their peers who have deviations in the development of posture. Thus, indicators of strength endurance, static strength of the back muscles, static balance according to the Romberg test, dynamic balance according to the Yarotskyi test, coordination of movements according to the Kopylov test, coordination abilities when changing body position according to the Burpee test, as well as an integral assessment of coordination abilities according to the corresponding index in girls who do not have deviations in the development of posture, it turned out to be significantly better developed than in peers with posture disorders.

#### **CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH**

Consequently, significantly worse indicators of various manifestations of coordination abilities of younger schoolchildren with deviations in the development of posture make it necessary to strengthen their coordination training with the help of specially oriented physical exercises.

Methods of controlling posture, physical development, and psycho-emotional tension make it possible to detect various postural disorders, delays in the development of the cardiovascular, respiratory, and central nervous systems of the body, and average indicators of physical fitness in 78-82% of children. The transition of students from elementary to primary school is accompanied by uneven development rates of many functional systems of the body, a state of unsatisfactory adaptation, which is manifested in the deterioration of performance indicators, morbidity and behavior.

Achieving a health-corrective effect is possible when conducting classes taking into account contraindications for performing certain exercises in various sports and devoting the first 20% of the time of each quarter in the physical education lesson (according to the curriculum of the physical education teacher) to general physical and preparatory exercises for the performance of the main program. An increase in the total movement load should be planned based on the individual selection of optimal corrective exercises for each child, depending on the type and degree of postural disorders. The device for examining the state of posture makes it possible to increase the accuracy of measuring the magnitude of postural deformations in children, providing an opportunity to assess the state of posture and flexibility of the spine in 1 minute by a physical education teacher without the involvement of doctors. It is important to take into account certain contraindications for performing certain types of exercises when compiling complexes for the formation of culture: in gymnastics lessons, do not perform acrobatic exercises, somersaults and flexibility exercises that increase the mobility of the spine, as well as exercises on projectiles; during moving and sports games - when learning to dribble the ball (in basketball), alternate dribble with the right and left hand. All exercises with the ball (receiving, passing, serving, throwing) should be performed with only two hands; in swimming lessons for children with stooped and kyphotic posture, practice swimming on the back more; with an upright posture - do not swim on your back; with a lordotic posture - put a swimming object under the stomach.

It is important that the main organizational and methodical technique in solving the tasks should be the game method, as the most comprehensive and universal means of child development in this age period.

**REFERENCES**

- Anikieiev, D. M. (2012). Rukhova aktivnist u sposobi zhyttia studentskoi molodi [Motor activity in the lifestyle of student youth]: avtoref. dys... kand. nauk z fiz. vykhovannia i sportu: 24.00.02. Nats. universytet fizychnoho vykhovannia i sportu Ukrainy. Kyiv. (in Ukrainian).
- Blavt, O. Z. (2012). Informatyvni pokaznyky rivnia fizychnoho zdorovia ta fizychnoi pidhotovlenosti studentiv VNZ [Informative indicators of the level of physical health and physical fitness of university students]. Pedahohika, psykholohiia ta medyko-biolohichni problemy fizychnoho vykhovannia i sportu: zb. nauk. pr. Kharkiv, 14–18. (in Ukrainian).
- Nikolaiev, S. (2004). Optymizatsiia rukhovoii aktivnosti studentok zalezno vid psykhofizychnykh osoblyvosti [Optimization of student's motor activity depending on psychophysical features]: avtoref. dys. ... kand. nauk z FViS : spets. 24.00.02 «Fizychna kultura, fizychno vykhovannia riznykh hrup naselennia». Lutsk. (in Ukrainian).
- Sikura ,A. (2012). Hipokineziia yak riznovyd zaleznosti [Hypokinesia as a Type of Addiction]. Fizychno vykhovannia, sport i kultura zdorovia u suchasnomu suspilstvi : zb. nauk. pr. Volyn. nats. un-tu im. Lesi Ukrainky, 247–252. (in Ukrainian).
- Yadviha, Yu. P. (2009). Vplyv rukhovoii aktivnosti na psykhoemotsiinyi stan studentiv VNZU ekonomichnykh spetsialnosti v suchasnykh umovakh navchannia [Influence of motor activity on the psycho-emotional state of students of higher educational establishments of economic specialties in modern conditions of study]. Pedahohika, psykholohiia ta medyko-biol. problemy fizychnoho vykhovannia i sportu : zb. nauk. prats / za red. S. S. Yermakova. Kharkiv, 12, 202–204. (in Ukrainian).

*Received* 09.11.2021  
*Accepted* 21.11.2021