IVAN VASKAN AND MARYNA KOZHOKAR

THE ORGANIZATIONAL BASICS AND METHODICAL PROVISION OF MOTION ACTIVITY DEVELOPMENT OF TEENAGERS IN THE EXTRACURRICULAR ACTIVITY

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The monograph revealed the organizational and methodical provision of the motion activity development in the extracurricular forms of physical culture of general educational establishments. Nature, standards and importance of motion activity, influence of hypokinesia and hypodynamia on the health state of pupils, ways of engaging to the systematic classes of physical exercises are described. The specific features of motion activity, physical state and motivational-valuable orientations of teenagers in general educational establishments are outlined. The model of motion activity development of teenagers in the extracurricular forms of physical culture was justified.

The study is recommended for a practical use within the process of professional activity by the teachers of physical education, postgraduates, students and all motivated specialists who participate in the studies and education of pupils in general educational establishments under modern conditions.

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INTRODUCTION

Nowadays the changes that are carried out in the education system, touched essentially on a process of physical education of younger generation. The search of ways how to increase its effectiveness is an object of permanent attention of many researchers. Since a comprehensive harmonious development of personality is provided by an adequate motion activity, it is one of the main factors that determine a health level of young generation. Researches advise to use different forms of physical culture and sports classes of pupils in order to increase a motivation for teenagers to the classes of physical education in the conditions of conducting the modernization of physical education.

Proper health state that is an integral index of society well-being and a sensitive indicator of social and ecological problems, has an important meaning for the optimal organism functioning of schoolchildren and their effective digestion of knowledge, skills and abilities. Numerous scientific researches (H. A. Apanasenko, 2005; E. M. Lukianova, 2003; V. M. Orzhekhovska, 2011; I. V. Potashniuk, 2012) established that about 90% of pupils have some health state disturbance, 30% – chronic diseases. More than half of children have low mental and physical working capacity that doesn't correspond to their loading at school.

Significance of this problem is also emphasized by the fact that physical readiness of younger generation to active life today – one of the defining factors of the further development of Ukraine. This thought has a confirmation in the series of documents: the order of MES №194 of 15.02.2021 «About the affirmation of Recommendations for a strategic development of physical education and sports training among the pupil youth for the period to 2025» National strategy of therapeutic physical activity in Ukraine for the period to 2025 «Motion activity – healthy lifestyle – healthy nation», adopted by the Decree of the President of Ukraine of 9 February 2016 №42/2016 and other legal and regulatory acts of Ukraine for the purpose of improvement and modernization of motivation forms and attraction of younger generation to regular physical education and sports.

Analysis of scientific sources, legal and regulatory documents, practice of physical education in the general secondary education establishments offers an opportunity to reveal contradictions of motion activity organization of teenagers that strengthen a relevance of the research, such as:

– between a level of modern requirements of society to the health state of pupils and practice of physical education in the general educational establishments;

– between a necessity to increase motion activity of pupils and potential opportunities of physical education as an academic subject at school;

– between a need to create motion activity of teenagers in general educational establishments and insufficient its scientific methodological rationale.

Necessity of solving the stated contradictions and also insufficient theoretical and practical study of chosen topic caused a study relevance of this research.

Practical importance of the obtained results is in the development of organizational and methodical providing of extracurricular forms of physical education of teenagers.

Presented in the monograph the study materials can be used in the process of the preparation of physical education teachers during the teaching of academic disciplines «Pedagogy», «Theory and methodology of physical education», «Physical recreation».

CHAPTER 1.
ROLE AND IMPORTANCE OF PHYSICAL ACTIVITY IN THE LIFESTYLE OF PUPILS IN GENERAL EDUCATIONAL INSTITUTIONS

1.1 General characteristic of movements and physical activity of human

Analysis results of scientific literature confirm that movement is a base of efficiency of human vital activity. Movement that is formed as a result of the contraction of skeletal muscles that provide the motion of separate parts and the whole body in space and time [151]. Movement is a human biological need, a main demonstration of adaptation reaction of the organism to the environmental changes. The importance of physical activity is emphasized by that fact it became the research subject of physiology [6; 9; 17; 53; 194;195], medicine [9; 90], pedagogy [43; 61; 127], psychology [154; 210].

The first concepts about the general mechanisms of movement construction were based on the notions about innate reflexes when the movement was considered to be the simple motion reflexes and the reflex circuit was regarded to be the basic element of complex physiological process. Reflex is a reaction of organism to any irritation that is occurred with the nervous system. Reflex is a main form of activity of organism's nervous system and it means 'a bending back' in the translation from Latin. However, the innate-reflex theory couldn't explain the well-motivated motion actions. So the discovery of conditioned reflexes quickly found its reflection in the views on general principles of movement construction. According to this theory, the main role in the control of motions belongs to the conditioned reflexes that are formed on the cortical level. The activity of brain cortex controls directly the stream of afferent signals that head for the muscles [160].

P. K. Anokhin [6], M. O. Bernshtein [17; 18], I. P. Pavlov [144]. I. M. Siechenov [165], O. O. Ukhtomskyi [194] made a known contribution in the study of the nature of movements. I. M. Siechenov [165] showed that random movements are reflex in actual fact (appear as a result of the reflection of object phenomena that have an influence on a human). Studying the reaction to the external sound stimulus, the scientist proved that the reaction is different when a person waits and doesn't wait for a signal. The reflex circuit is the same in both cases. But the brake mechanism of brain cord

activates during the waiting. I. M. Siechenov showed that all motion actions are based on reflexes which have three stages: primary (external irritation and its transformation by sense organs into the process of nervous excitation), secondary (central processes in the brain (processes of excitation and inhibition) and on this basis the appearance of psychic states (senses, thoughts, feelings), final (external movement). I. M. Siechenov owns the statement about the fact that all external demonstration of brain activity can be reduced to the muscular contraction. But the role of muscular system isn't limited only by movement. Muscle is the organ that plays a double role: a working machine and an organ of the senses. According to the author's statement, muscle is an analyzer of space and time. So, I.M. Siechenov approached to the explanation of physiological criterions of human psychic activity.

I. P. Pavlov [144] gave reasons for the main principles of reflex theory. He established that the conditioned reflex can be developed only when the conditioned excitator precedes the unconditioned. Conditioned reflexes are not formed in the other combinations and even if it's possible they are weak and go out quickly. It is important that the conditioned reflex should be weaker biologically than the unconditioned one. The scientist's research about correlation of excitation and inhibition, their intensity and duration gave an opportunity to separate four main types of the higher nervous system of human.

Studies of O. O. Uhtomskyi [194] have an important meaning for the comprehension of the role of special mechanisms of complicated relationship by the intensity of excitation centers in the formation of final motion action. The scientist explored that each motion effect is determined by the character of dynamic correlation of cortical and subcortical centers, current needs of organism, history of organism as the biological system. It is worth to study the brain as an organ of preventive perception, premonition and environment design. The dominant has such feature as an inertia that is a tendency to be supported and repeated when the outdoor environment changed and the irritants that caused this dominant, don't act on the central nervous system no more. Inertia breaks the normal regulation of behavior when it becomes a source of intrusive images and hallucination, but it is like an organizing beginning of intellectual activity.

O. O. Uhtomskyi considered that something we experience emotionally (joy, anger etc.) is fixed in the nervous centers in greater detail, clearly and firmly. In physiological plan he mentions the increased mobility of nerve elements that is determined by the activity of vegetative and endocrine

systems which is the precondition of tougher fixation of external impacts and their adequate reproduction. These conclusions are used widely in modern psychology and pedagogy.

The theory of functional systems was developed by P. K. Anokhin [6] and it has a great significance for the comprehension of motion theory. It is considered to be the most completed system theory in physiology as it contains not only clearly defined concept of system and the developed internal operating architectonics of system and defined main principles of its functioning. With the system approach, the behavior is regarded as a complete and organized (in some measure) process which is directed on an adaptation of organism to the environment and its active transformation. The adaptive behavior act which is connected with the changes of external processes has always a purposeful character that ensures a normal vital activity for the organism. Functional systems are dynamic organizations that are self-regulated, their activity of all compound components promotes the getting of vital adaptive results for the organizm. Just the theory of functional systems of P. K. Anokhin was found to be the most effective and adapted for the physiology, variant of system methodology because in comparison with other variants of system approach, this theory includes the developed concept of systemically important factor.

In the research of problems of random motions' regulation, the control scheme (by the principle of sensory corrections) by M. A. Bernschtein [17] is deserved attention. The moment of changes of functional state of proprioreceptors of muscles during the motions is a signal for the creation of correcting impulses in the central nervous apparatus according to the control scheme. Getting into the motion centers of controlling system, the receptor impulses change their tonus in the proper way. The need of motions' correction always appears under the sudden change of motion situation (external factors), under the change of friction force, initial length, viscosity and elasticity of muscles (internal factors). Reaction of the organism to the action of mentioned factors is provided by their inhibition or including as a component to the main motion action. Since the effectiveness of performing movements is based on sensory corrections so under the grinding of details of complex motion actions, the irritation of receptors must be the same as in a holistic skill. So if any other motion can be learnt and fixed in a slow pace, in the usual conditions when it's necessary to do the action quickly, the technique of automatic movements will be broken as a result of changed irritation of receptors. Process of analysis and synthesis activity of regulating system that is directing to the effective performing of movements considering

the majority of sensory signals is called (by M. A. Bernshtein) a formation of movements. The formation of any random movement is related to the prior intensification of main for this activity structures of brain (leading or main level of formation of movements) and additional sectors of CNS (additional and background level). The main motion task is being solved on the leading level, the secondary one – on the background level. The leading level of movements' formation is always being realized and the background level can be performed subconsciously as a result of high level of automation.

M. V. Zimkin [71], M. A. Fomin [54], A. V. Korobkov [85] made an important contribution in the development of the theory of motions. Random motion activity of human is connected with perpetual changes in the interaction of organism and environment. The acquisition of complex technique of physical exercises under the change of external conditions of activity is demonstrative example of such interaction. The result of analysis and synthesis activity of the cortex is a formation of thin and exact differentiations that allow doing rationally this or that motion action. The control system of random movements is formed on basis of the mentioned activity.

V. I. Zavatskyi [214] defined that production and sport activity as is also unfavorable factors of the environment in a human organism cause a purposeful alteration of suitable functions that changes a size of «permanently persistent consistency» between them. The organism takes into account an output level of functional activity of sensory and vegetative systems under the formation of «action program» for the achievement of a specific purpose.

In the scientific works of A. S. Rovnyi [160] there is shown the mechanisms of sensory control and operation of exact human movements, and proved the existence of mechanisms of intersensory connections during the motional activity. The materials of researches affirm that during the operation of exact human movements, a sensory functional system is being formed and here different sensory functions play a leading role in the operation of movements depending on the level of special preparedness and particularity of muscular activity.

Scientists [54; 138] claim that the last half a million years a human evolves philetically in sense without changes in a genetic program. During the historical development, a movement became a prior condition of life and survival of a human. The motion need (kinesiphilia) (a biological need of organism that plays an important role in a human vital activity and is found to be in close connection with an active muscular activity that promotes the adaptation to the environment) was formed. However, the life style of people

during the last hundred years changed completely. The fate of muscular efforts in a production and domestic activity declined harshly. Scientific and technical progress set a human free from 95% of mechanic work and that caused far less consumption of physical strength for the provision of an existence [92]. Due to the scientific data [195], a role of muscular activity at work for the century declined from 94% to 1%. At the same time, the ration of motional activity, consolidated during the millenniums in the human genome, didn't become an anachronism since it is not possible to get free from its planned program of vital activity under the conditions of unchanged genome.

Inadequate number of human movements leads to the hypokinesia (from the Greek *nuro* – decline, decrease, inadequacy; *kinesis* – movement, specific state of organism, caused by inadequate motion activity). Hypodynamia (from the Greek *dinamis* – strength) – a disturbance of organism functions (skeleto-muscular system, blood circulation, breathing, digestion), that happened because of a restriction of motion activity, a decline of muscular strength.

Harmful influence of hypodynamia and hypokinesia on the human organism is proved by numerous experimental, clinical and epidemiological researches [7; 13; 72; 160; 212; 214]. Deficit of movements causes the significant negative morphofunctional changes in the organism. Complex of the most profound physiological disturbances, caused by a hypokinesia, belongs to prepathological and pathological states. The main symptoms of these stages are an adynamic syndrome, a detraining of regulative mechanisms, a decline of functional possibilities and a disturbance of the activity of skeleto-muscular system and vegetative functions.

Harmful influence of hypokinesia and hypodynamia affect firstly the organs of movements. The muscular fibers get thinner, the supplies of their energy resources decline. These changes lead to a degradation of functions of skeletal muscles: thermoregulatory, vibro-hydraulic pump, myotrophic, locomotor, plastic and receptor [54]. Life style of physical inactivity leads to a disturbance of fat metabolism of processes of the organism. Also, the decrease of motion activity declines the hormonal reserves that reduce a general adaptation capability of organism. The disturbance of a diapason of regulation of vegetative nervous system, the decrease of its adaptation and trophic role gets a special importance.

Hypokinesia reduces the strength and endurance of muscles, declines their tonus, and leads to the expressed functional changes. Particularly the cardiovascular system is defenseless – a functional state of heart gets worse, the economy of its work reduces the oxidative processes in the cardiac muscles break. It promotes an early appearance of degenerative processes in

the blood circulation system and a quick deterioration [160]. Under the low physical load, the muscle atrophy intensifies and it induces structural and functional changes that cause a muscle weakness. Relaxation of muscles, binding and bone apparatus of torso, inferior limbs disturbs to perform completely the supporting functions of body weight. This causes a deformation of spine, chest and pelvis.

Continuous decline of motion activity leads to the further disturbances of vital activity of the organism that gradually become unalterable. Consequently, nowadays there is a spreading of so called diseases of civilization – hypertensive diseases, atherosclerosis, coronary heart disease, myocardial infarction, diseases of leg vessels, fault in posture with a lesion of musculoskeletal system [92].

Hypokinesia causes a disturbance of health. Separate researchers [2; 95; 101; 126; 155] consider a hypokinesia as a factor of risk that causes the diseases. The average life expectancy of Ukrainian population is less than 70 years. Due to the average annual figures, the population size continues to shorten. Reduction of population numbers occurs essentially as a result of excess of mortality rate over the birthrate that has been lasting since 1993.

The frequency of diseases that are caused by the environmental pollution, the immunity depression, stresses, insufficient and imperfect nutrition, etc. has a tendency to rise. So, a frequency of blood diseases, hematopoietic glands and diseases of blood circulation system increased. Significant changes in the dynamics of disease rate of population occurred in Ukraine. The frequency of breathing diseases had a stable tendency to reduce but the disease rate of other illnesses increased. If in the late 90's of the last century, the breathing diseases, the diseases of endocrine system, the infectious diseases were the most common among the children, then within recent years the diseases of respiratory organs and nervous system distributed in the structure of disease rate. It ought to be remarked that the spread of diseases of nervous system among children has a growing trend. Just for the last five years their amount has increased by 35 % and they got the second place among the diseases.

The results of researches of V. H. Arefieva [8], O. D. Dubohai [46; 48; 49] demonstrate convincingly that the disease rate of pupils in the conditions of hypokinesia is higher twice as much than of their coevals with a normal level of physical activity that related to a decline of general nonspecific fragility of the organism. Furthermore, a hypokinesia in the childish and teen periods is a factor of risk of development of serious health disturbance in a mature age.

There is a thought that a health of adult human depends greatly on the movement activity of a child [184].

Generally, the negative consequences of hypodynamia on the human organism are presented in the table 1.1.

The results of researches of O. H. Sukhareva [184; 185] testify that a deficit of movement activity leads to a decline of adaptation of cardiovascular system of pupils to the standard physical exercises, a reduction of EVC and a stature straight, an excess weight, a rise of cholesterol in blood. Level of disease rate of pupils in the conditions of a hypokinesia increases twice as much that related to a decline of general nonspecific fragility of the organism. The main reasons of a hypokinesia appearance are presented in the table 1.2.

The most effective means to overcome a hypodynamia is a maintaining of healthy life style (a style of separate person, directing to the diseases prophylaxis and a promotion of health). It includes such components as a following motion regime, a day regimen, a rational nutrition, hygiene regulations, a lack of bad habits, a kindly attitude to the people around.

Notion 'motion regime' includes a repetition and a distribution of all kinds of physical activity during a day [184]. Rational motion regime corresponds to the contest and organization of general hygienic principles that are justified by regularities of central nervous system's activity and anatomico-physiological features of a growing organism.

Table 1.1

Effects of human motion activity (L.Y. Ivaschenko, A.L. Blahii)

System	Nature of changes
Cardiovascular	Frequency of cardiac contractions in the quiescent state and during the physical exercises reduces; myocardium has a better capacity to contract; less need of cardiac muscle to get oxygen; productivity, reserve of core increases; elasticity of blood vessels rises; arterial tension becomes normal.
Respiratory	Respiratory muscles develop, their strength increases; total lung capacity grows; physiological rational development of capillary network occurs; efficiency of respiratory functions gets better; reserves of respiratory system grow.
Exchange processes	Content of cholesterol reduces; exchange processes become normal.
Locomotor apparatus	Blood circulation and muscles of nervous system improve; high efficiency of enzymes that accelerate aerobic (oxygen) and anaerobic (oxygen less) reactions in the muscles; elasticity of muscles and tendons gets better; mobility of joints gets better.
Nervous	Mobility and balance of nervous processes increase; sensitivity to the stresses reduces.
Endocrine	Functional opportunities of thyroid gland and cortical substance of adrenal gland get better.

Daily motion regime defines and regulates the whole period of life and that's why its rationalization makes an assumption as for a prophylaxis of diseases and successful realization of teaching and educational process in educational establishments.

Table 1.2

Reasons of hypokinesia appearance (A.H Sukharev)

Type of hypokinesia	Reasons of appearance
Physiological	Influence of genetic factors, motor «debility», anomalies of development
Everyday	Adaptation to the physical inactivity, decline of motor initiative, everyday comfort, disregard of physical culture
Professional	Limitation of motor activity as a result of production necessity
Clinical («nasogenic»)	Diseases of loco motor system; illnesses; injuries after a man must stay in a lying position for a long time
Age-old	Decline of need in a motor activity
School	Incorrect organization of teaching and educational process; overload with classes; disregard of physical and labor education; lack of active leisure
Climate geographic	Unfavorable climatic or geographical conditions that limit a motor activity
Experimental	Modeling of decline of motor activity for carrying out biomedical researches

The results of scientific researches confirmed that a close interconnection is between physical exercises, a daily motor activity and a human health [16; 30; 97; 127; 132; 201; 208]. This problem has a significant actual material in the scientific literature [1; 3; 35; 45; 86; 93; 180; 184; 189]

The definition of term «motion activity» includes a sum of movements that a human performs within a process of vital activity [92]. Motion activity is an essential component in a human's vital activity that is shown in the performance of some amount of motion actions [184]. It is determined by social-economic and cultural factors, depends on the age and occupations, individual, psychological, physical and functional peculiarities, a number of free time and a pattern of its using, a presence of sports buildings and leisure areas, then it depends on climate geographic conditions that promote an active rest [92].

V. K. Balsevych [12], T. Y. Krutsevych consider that a motion activity is an essential part of lifestyle and human behavior. According to the data of H. L. Apanasenko [7], motion activity is an activity of individual, heading for the achievement and support of physical body conditions, necessary and sufficient for the improvement of health, physical development, and physical activity.

Motion activity is a combination of all movements that a human performs within a process of vital activity. Usual and specially organized motion activities are differentiated [92].

According to the definition of WHO, a usual motion activity includes all kinds of movements that are related to the natural needs of human (sleeping, hygiene, food, efforts to cook it, etc.), then the educational and production activities. Specially organized muscle activity (physical education activity) provides different forms of physical exercises, an active movement to school, from school (to work). Characterizing the problems of motion activity's components, it is necessary to remark an insufficient working of items of the combination of all forms of spontaneous and specially organized motion activity.

O. S. Kuts [97] also distinguished two types of motion activity for a definition of a quantitative evaluation of motion activity then he called them every day (spontaneous) and sports-fitness, and expanded a list of specially organized and individual classes that fundamentally doesn't differ from a definition in the treatment of a notion «motion activity» by WHO.

Complex program for physical education that we have, provides extra and optional classes, except three training classes per week. According to this program, children must do physical exercises for about two hours every day. However, a general secondary school can't ensure a necessary capacity of motion activity that's why specially organized motion activity doesn't exceed 3-4 hours per week that makes up only 30% of hygienic norm [92].

Consequently, due to the literary sources it was defined that a motion is a result of contraction of skeletal muscles, after that not only a transfer of separate body parts in a space occurs and the adaptive, energetic, nervous, exchange functions of human organism are provided. The amount of human movements during some length of time defines usual (ever day activity, hygienic procedures) and specially organized (sports-fitness, active leisure) motion activity. Motion activity ensures a conservation of an interconnection of organism with the environment, a normal height and a development of pupils' organisms, a promotion of health, a normal functioning of internal organs and systems.

1.2 Regimes of motion activity of pupils in the general educational establishments

Numerous scientific researches [14; 24; 40; 44; 133; 121; 215] proved that a physical condition and a human health are in the direct relation to the amount of motion activity. It is advisable to study a motion activity as an important factor of a conservation of high not only a physical but a psychic working capacity. It is not only a mean of performing a motion function but it has a general biological meaning [52; 115; 161; 168; 185].

A motion activity plays an important role at all stages of human life. In the childhood, it provides a normal growth and a development of the organism, promotes an adequate demonstration of genetic potential, and increases a resistance to the diseases. Precisely, in a period of growth, an organism is the most sensitive to the influence of negative factors of the environment, including a limited motion activity [138].

Reasons of optimal amounts of motion activity were discussed in some scientific works: a problem of measuring and evaluation of a regime of motion activity were regarded [5; 15; 80; 97; 106; 119; 163]; a daily and a weekly amounts of motion activity for people of different age and a physical condition were researched [13; 28; 79; 88; 145; 155; 212], standards of motion activity due to the sexual-age-old peculiarities were installed [36; 64; 92; 151; 176; 184], the ways of evaluation of motion activity were determined: counting of locomotion, daily energy consumption and a method of formal self-accounting [73; 92; 136; 159; 184; 212].

Research Institute of children and teenagers' physiology recommended an everyday two-hour size of motion activity for schoolchildren to satisfy the motion needs. For that time, it is possible to achieve a sufficient physiological loading that depends on the types of exercises, a quantity of loads during the breaks, motor saturation of lessons with physical education and extra off-hour classes. In 1968 the International Council of Physical Education and Sport Science proclaimed a special manifest about a sport where there was a performed attempt to define an everyday lasting of physical education classes at school. To the experts' mind, it is necessary for these classes to give out from 1/6 to 1/3 of academic time [30]. So the scientists agree that an optimal amount of motion activity must be 12-14 hours a week on condition of appropriate physiological loading.

According to A. H. Sukharev, nowadays a motion regime of pupils in the primary schools in the weekly cycle is totally 3-4 hours at a standard 20-22

hours. Daily teenagers' needs of movements are fulfilled on average in 18-22% that's why a deficit is about 80%. Rating scale of a total daily motion activity of teenagers is presented in the table 1.3.

Table 1.3

Rating scale of a total daily motion activity of children and teenagers (A.H. Sukharev)

Group	Index	Rating of motion activity		
		hypo kinesia	hygienic rate	hyper kinesia
5-6 years, boys, girls	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 7.5 < 9.0 < 4.0	8.6-10.5 11.0-15.0 4.5-5.5	>13.0 >20.0 >6.0
7-10 years boys, girls	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 8.0 < 10.0 < 3.5	10.6-12.5 15.0-20.5 4.0-5.0	> 15.0 > 25.0 > 5.0
11-14 years boys	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 10.0 < 15.0 < 3.0	12.6-14.5 20.0-25.0 3.5-4.5	> 17.0 > 30.0 > 5.0
11-14 years girls	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 10.0 < 12.0 < 3.0	12.6-13.5 17.0-23.0 3.5-4.5	> 16.0 > 28.0 > 5.0
15-17 years youths	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 12.0 < 20.0 < 2.5	14.6-16.5 25.0-30.0 3.0-4.0	> 20.0 > 35.0 > 4.5
15-17 years girls	Energy consumption, *mj* Locomotion, *thous. of steps* Endurance of motion component, *hrs*	< 11.0 < 15.0 < 3.0	13.6-14.5 20.0-25.0 3.5-4.5	>18.0 >30.0 >3.5

Scientific researches [42] defined that due to the normative rating, teenagers 14-15 years are characterized by a low level of energy consumption for the motion activity (33.5±15.1 kcal/kg) that is 55.5-63.9 % of optimal hygienic rate. With the increase of years more schoolchildren prefer sport-massive events that offer an opportunity to increase a motion activity and daily energy consumption.

According to the hierarchy of components of motion activity, teenagers have a dominated specially organized motion activity by forms of physical

education in the family. It is set that an index of daily motion activity of girls equals 31.23±0.62 points, while boys have it higher and it is 32.65±0.66 points [40]. Specially organized motion activity that includes different forms of PE classes, is limited by 40 minutes per day for the main part of schoolchildren.

In the research of N. S. Voinarovskyi it was found that the indexes of daily motion activity of schoolgirls 11-15 years are within the limit of 32.44-32.92 points. Girls 12-13 years have a bit higher level of daily motion activity in comparison with the girls of the same age of other age-old groups. Daily energy consumption is 41.86 – 42.4 kcal/kg.

Comparison of received data with statistically average indexes testifies that daily energy consumption of girls are much lower than the recommended quantities (11 years – by 46.29%; 12 – 34.43%; 13 – 23.11%; 14 – 19.39%; 15 – 14.67%). In practice of school PE, a specially organized motion activity of girls is 0.34 – 0.42 hours that is by 65 – 70% lower than the hygienic standard. 76.93 – 85.47 % of pupils (dependent on their age) limit their motion regime only by compulsory school PE lessons.

According to the research of A. H. Sukharev [184], T. Y. Krutsevych [92], a capacity of purposeful lessons of physical exercises must be 12-15 hours per week. So, it is possible to state that the level of motion activity of teenagers in the researched cities, is low as it consists approximately 35% of a hygienic standard. By 6% higher is characterized level of motion activity for boys in comparison with girls.

Empirical data testify that a natural need of movements for pupils of general educational establishments begins to decline noticeably in the secondary school but in the higher school more and more pupils haven't already shown a desire to do physical exercises [20; 26; 91; 110; 150; 200]. That's why it is so important to formulate timely a need for children to do physical activity systematically. An average school age is considered to be the most advantageous since at that time some significant changes occur in the physical and psychic development of a child, basics of health lay down, future habits, life views, interests, character features and consciousness form [160].

A large number of works are devoted to the problem of development and rationale of regimes of motion activity: examined a problem of measuring and evaluation of regime of motion activity for people in the different working and education conditions, grounded a daily and weekly capacity of motion activity in the different quantifying figures, developed ways of optimization of motion

regimes of children and youth [21; 77; 114; 129; 143; 197].

In the scientific works, there are some statements about a connection between motion activity and a level of physical preparedness and working capacity [15; 33; 57; 92; 99; 120; 148; 156]. During the determination of an optimal motion activity, it is advisable to follow the following sequence:

1) a search of general regularities that determine an efficient standard of motion activity;

2) a development of recommendations on the subject of an organization and a methodology of carrying out different forms of classes (organized and separate, individual and group);

3) a development of recommendations on the subject of an organization and carrying out the special forms of classes in the regime of work and free time dependant on a nature of work.

According to the research, I. M. Ripak [157] patented as an invention the hardware and software unit for the quantitative measures of a human motion activity that gave a chance to study objectively the options of motion activity of men of the first mature age who do a mental work and consequently a physical loading and a physiological state of their organism in real life conditions. The results of measures of motion activity options of men with the help of an hardware and software unit testify, that the studied men have individual distinction in the indexes of numbers of movements and frequency of cardiac beats. Maximum indexes of movements were 14 836 movements per day, minimum – 2 582 movements per day.

O. D. Shvai [172] developed the methodical recommendations and organizational-methodical regulation about an improvement of individual regimes of motion activity for schoolchildren dependant on their age, sex, social conditions of habitation, and geoclimatical conditions of environment, individual tendency and motivation. The researcher proposed a classification of types of motion activity for children that gives a chance to define a place of organized and unorganized forms of physical education and an algorithm of urgent control by a character of internal changes of a childish organism that is based on the use of developed hardware and software unit for a quantitative measuring of motion activity options.

M. P. Horobei developed and implemented in practice the methodic recommendations on the subject of an activization of motion activity of pupils in the regime of extended day [69].

In the process of research, I. O. Kohut found out that the average daily energy consumption of pupils 6-7 years in different types of schools consists

2 530 – 2 990 kcal and is with the limit of a physiological standard. However, a range of this «standard» is about 500 kcal that greatly distinguishes a motion regime of first graders, especially by the components of intensity of motion activity. So, depending on the conditions of organization, a number of kinds and forms of classes of physical exercises in the schools, a capacity of motion activity of «medium» and «high» intensity is in the range 12.4 and 18.8% of a general time of day. The daily regime of schoolchildren differs by a basic component of motion activity that includes the sleep (at daytime and at night). In the schools where there are no restrooms, a daily sleep takes less by 30-40 minutes.

The attempt to introduce an extra football lesson in the educational-training school process was a step towards the solution of problem to increase a motion activity of pupils. With regard to this, V. P. Romaniuk [158] studied an effectiveness of a football using as a mean to the health improvement of children at school. On the basis of the results of studying the influence of football classes in the conditions of sport boarding school on the boys 11-17 years, it is shown an effectiveness of football as one of means to improve a morphofunctional development, a physical readiness and a working ability of schoolchildren. Young footballers of a sport boarding school have a range of features of a morphofunctional development, a physical readiness and a working ability in comparison with untrained coevals then it was defined the periods of an increasing of these features.

S. M. Dmytrenko developed a methodology of using different motion regimes of junior schoolchildren in a combination with medical and biological means in the condition of increased radiation [40].

N. S. Voinarovska [201] justified the means of development of motion activity for the girls 5-9 grades in the general educational establishments by the means of a calisthenics. Consist and directivity of calisthenics classes in the curricular and extracurricular forms of physical culture, are determined by the therapeutic, educational and developing tasks. Particularly, a process of studying of the sets of calisthenics was being conducted during the PE lessons, the improvement of physical qualities – during the extracurricular separate classes, shifting attention and classes of tiredness – in the process of PE breaks, increasing the interest and motivation to the performing of physical exercises – during some sports holidays and health days.

In order to confirm the skills of a separate performing calisthenics, its elements were included to the homework. The girls assimilated the recommended exercises for some groups of muscles or a range of dancing exercises, determined a rhythm of performing movements and tracked the

measure of physical loading.

In order to improve the regimentations of motion regimes and to individualize the means of health improvement on the basis of complex biological and pedagogical researches, N. O. Tupchii [192] justified a rational directivity and a content of motion activity regimes in the conditions of preschool establishments according to a structure and level of physical state, also developed functional characteristics of its different levels as a basis of rational regimentation of motion activity regimes; justified a system of evaluation of physical state of children 5-6 years for using in a regimentation and control of effectiveness of motion activity regimes in the conditions of preschool establishments.

Y. V. Yurchyshyn [211] developed a technology of attraction of students to a motion activity of health improvement directivity in the process of physical education. The technology is directed on the achievement of appropriate purpose by means of following the principles of physical education, planning of pedagogical technologies and basic regulations of self-determination theory and conception of public education on the subject of physical active lifestyle.

The technology signifies carrying out an output control of students for the characteristics of primary physical state, corresponding motivation and level of methodical-theoretic knowledge, also a conclusive control for an evaluation of achievement of planned results.

The content of technology unites the methodical-theoretic and practical preparations, the control of a level of preparedness and motion activity of students (operative control is during every class in order to evaluate the accordance of physical loading with student possibilities; current control – at the end of studying semester and year for a determination of indexes of physical state, theoretical preparedness, parameters of motion activity during the off-hour time, number of missing days because of the illnesses during the whole academic year).

The algorithm of realization of the technology content – a consistent fulfillment of such technological operations: 1) a determination of purpose of PE lessons by as many as possible numbers of motives to the motion activity of health improvement directivity; 2) a provision of leading role of effective motivation component in the realization of content of PE lessons; 3) complex and adequate using of modern informational means to the content of classes; 4) a determination of terms of organization and content of system of control the results of students' activity; 5) an implementation of preparation of proper material and technical maintenance of physical education; 6) a provision of actualization the content of

methodical-theoretic part of physical education; 7) a provision of satisfaction of the main psychological needs of students and a concrete definition of directivity and a proportion of physical exercises during all lessons.

D. M. Anikieiev [5] justifies a complex of organizational-methodical occasions directing on a rising of level of motion activity and a formation of healthy lifestyle of youth. A systematization of means of motion activity was held, recommendations on the subject of an organization of motion activity for young people were presented.

A complex of organizational-methodical occasions directing on an improvement of PE process, a formation of healthy lifestyle that includes a rising of capacity of motion activity till 8-10 hours a week due to the compulsory forms, facultative and separate classes considering interests, wishes, abilities and individual peculiarities of an organism.

In the scientific literature, a motion activity is regarded through the formation of healthy lifestyle [51; 55; 61; 98; 118; 128; 169; 204], a development of incentive motives of motion activity [41; 67; 141; 217], an introduction of new educational technologies [34; 43; 66; 70; 78; 109; 196; 202], a programming of health improvement trainings [4; 27; 31; 29; 60; 65; 119; 205], individual classes of physical exercises [59; 103; 198; 199; 213], a realization of inter subject-matter connections [87; 124; 173], a rising of role of physical culture and sports in the promotion of health [19; 38; 39; 50; 58; 63; 100;104].

So, a well-regulated physical loading that satisfies a biological need in movements and corresponds to the functional chances of organism, determines an optimal motion regime.

1.3 Modern approaches to the organization of motion activity for pupils of general educational establishments

Motion activity for pupils of general educational establishments consists of various forms of classes with physical exercises (PE lessons, extracurricular and extramural sports-massive activity). PE lesson as a basic form of physical education of pupils is directed first of all on the solutions of educational problems. Rising of sports preparedness of pupils, a recreation are mostly realized by means of extracurricular and extramural work. That’s why it is important to develop different forms of physical training and sports classes for pupils.

The results of analysis of scientific literature testifies that a question of

physical culture of pupils was in the permanent highlight of scientists [25; 82; 83; 84; 89; 112; 116; 134; 147]. Medical and biological basics of a motion activity of pupils are determined in the researchers of H. L. Apanasenko [7], I. O. Arshavskyi [9], I. V. Muravova [130], O. H. Sukhareva [184, 185], N. A. Fomina [54]. Due to the researches of V. H. Arefieva [8], O. D. Dubohai [46; 48; 49], T. Y. Krutsevych [91], Mahlovanyi [111], B. M. Shyian [174; 175] and other researches, are developed the organizational and methodic basics of physical exercises performing at school.

At the same time, the results of researches testify that a state of physical development and functional possibilities of schoolchildren is low [11; 62; 75; 91; 105; 123; 216]. N. V. Moskalenko [127] defined such features of motion activity and physical state of pupils:

– the level of motion activity of most children is low. At the age of 6, they need 88.3% of time for basic, sitting and low levels, at the age of 7 – 91.6% of time, 11.7% and 8.4% accordingly for average and high levels;

– indexes of somatic health of most boys 7 years – 87.0%, 8 years – 61.5%, 9 years – 44.8%; of girls – 83.8%, 57.1%, 31.3% accordingly, in 2007 they have a level that is lower than average;

– a comparative analysis of physical development level for five years testifies that the indexes of physical development have analogical distinctions. Endurance, strength of muscles of abdominal tension, strength of arm muscles lag mostly;

– a percentage correlation of levels of physical development to the levels of physical health showed some positive tendency: the higher level of physical development, the better is physical health.

Statistical data testify that during the entry to school, every third child has different deviations in the state of health and every second child – to the end of the studying in the ninth grade [35]. About 10-20% of modern schoolchildren have excess weight; 30-40% – diseases of nasopharynx; 20-40% – posture disturbance; 50% – defects of eyesight and neuropsychological deviations; 50-60% – tendency to frequent diseases [164].

Problems of a health formation, a culture of health, a healthy lifestyle were being developed in such directions: a rationale of holistic approach to the human health formation [2; 7; 35; 46; 130; 135; 140]; a formation of health culture and healthy lifestyle of personality [70; 137; 150]; a research of different aspects of making conserving-health educational environment [22; 23; 76; 137; 206; 215].

One more important task of modern school for the health promoting is a

creation and a consolidation of motivation for leading a healthy lifestyle with the help of increasing a level of knowledge and a formation of necessary cognitive, behavior skills and skills of social interaction [137].

For a correction of prenosological states of primary school aged children, T. H. Omelchenko [135] developed scientifically and tested a technology of correction, taking into account a type of prenosological state of organism by way of example the physical training and recreational classes with the elements of a fitball aerobics. The developed technology allowed to demonstrate a dynamics of indexes that determine a prenosological state and have a corrective influence in the process of these classes.

I. M. Potashniuk [150] testified a system of health-forming technologies and structural-functional model of teaching of health-conserving pupils of 1-11 grades of general educational establishments by means of health-conserving methods on the basis of cross-curriculum ties, a core of which is in the using a complex of specially proposed means during the lessons in the primary school (Maths, Reading, Ukrainian, Physical Education), during the natural lessons (Biology, Chemistry, Physics, Fundamentals of Life Safety) and liberal subjects (Ukrainian, German, English, Ukrainian and World Literature, Social Disciplines, Art, Physical Culture).

Determining basic item of structural-functional model of health-conserving school youth in the educational system is a principle of health priority that provides a value orientation of pedagogical and educational system of school on the health organization as a basic value and the most important result of activity, a direction of content and an organization of educational process and a school environment on the formation of needs to lead a healthy lifestyle, support and timely correction of health diffects for different aged groups of schoolchildren.

A renovation, a correction of health education content in concordance to the modern scientific achievements, an organization of controlled and self-controlled physical education activity of schoolchildren in the process of leading type of activity (of lesson and in the extracurricular time) were used as main principles of education models. New system of classes organization on the cross-curriculum basis with the use of material that is filled with a content on the subject of an organization of health culture, a healthy lifestyle of pupils, a system of knowledge and skills control on every stage of studying, a control of indexes of physical development, physical training, psychophysical state, success of studying were applied as methods of realization of education model. Specially developed books for teachers who work with pupils and their

parents, are applied as main means of realization of education model.

Competence on the subject of psycho-pedagogical diagnosing occupied the knowledge of methods of survey and peculiarity of research results explanation such as health components of schoolchildren: physical, psychic (emotional, intellectual), social, personal and moral.

On the basis of the study results and taking into account the positions of systems approach as a methodological basis of the research, Y. Y. Tsiupak [191] developed a structural-functional model of formation the health-conserving knowledge and skills and a basis of this model is a correlation of all components of educational process for adhering the certain aim, tasks, principles, content, methods, means and forms of studying.

According to the developed model, the tasks of educational activity of pupils are in the organization of motivational-value, cognitive, operational-composite and effective components of health-conserving competence. The motivational-value component ensures an organization of value attitude of pupils to the health-conserving activity. The cognitive component expects a formation of knowledge system and development of thinking of a pupil. The basis of operational-composite component is an organization of operational-composite skills of pupils. The effective component provides a development of physical qualities, functional possibilities of pupils that ensure a good health.

O. A. Tomenko [190] studied the theoretical-methodological basics of unspecialized PE education of school youth under a kind of conceptual model and conditions of its realization. In his opinion, a sequence in the realization of unspecialized PE education of school youth in the educational establishments is expressed in: a steady raising of academic load from two-three hours per week for schoolchildren; a rational construction of variable component of unspecialized PE education on the basis of a consistent acquisition of techniques of gymnastics, sports games, swimming, track and field athletics, aerobics, tourism from school till the higher educational establishment; used forms of realization that mutually complement each other (fixed, extracurricular, separate for schoolchildren; lections, practical classes, seminars, individual, sectional classes for students). At the same time, different systems of an evaluation are used in educational establishments, there are some distinctions in the content of an invariant component during the transit from a school to a higher educational establishment where due to the curriculum, only such kinds of sport are provided: track and field athletics, sport games and tourism, is being observed a repeatability of program material on the subject of theoretical knowledge that are provided for schoolchildren

and students.

Conceptual model of unspecialized PE education of school youth represents its theoretical-methodological basics:

– the theoretical basics consist of a development of its conceptual apparatus, an organization of a wide concept definition, a clarity of purpose, tasks and functions, a reasoning of principles and forms of realization. The aim of unspecialized PE education of school youth is a promotion of an organization the physical culture of a personality; its tasks are general and specific.

– the methodological basics consist of a reasonable structure and conditions of a realization of unspecialized PE education of school youth; an axiological, systemic and active approaches in education; basic strategies of physical culture theory.

In order to form a motion activity of pupils in the scientific sources, firstly there are proposed to improve the program-standard theories of physical culture taking into account the regional peculiarities and theories of studying activity [11; 125]. I. V. Bakiko [11] developed an experimental program of physical culture for pupils of general educational schools that consists of two parts – basic and variable. Basic part of program includes State standard and requirements to the evaluation of pupils and it is directed on the learning of traditional kinds of physical exercises: active games and folk games, gymnastics, sports games, track and field athletics, swimming. Variable part is determined by regional and school components. It takes into account the material resources, the climatic conditions and traditions of the region and school, a staff potential. The basics of variable part of program are calisthenics, step aerobics, slide aerobics, aqua aerobics, water polo, badminton, tennis, hockey, gorodki (townlets), ski and skate training, tourism, sports orientation, cycle racing, rope skipping, athleticism, chess-draughts.

Considering a content of legislative documents [181; 182] and a state of pupils' health, therapeutic effects of physical culture are studied thoroughly in the scientific works. Especially, K. M. Sydorchenko [187] studied the ways of optimization of therapeutic directivity in the physical education of boys 11-15 years, I. L. Hasiuk [60] – a programming of therapeutic directivity of PE lessons for girls 11-14 years of different somatotypes, O. V. Andreieva [4] – a programming of fitness and therapeutic classes for girls 12-13 years. Scientists studied an effectiveness of classes by separate physical exercises [117; 139; 146; 149; 166; 167; 177], problems of complex development of physical qualities [9; 91; 150], a modeling of physical readiness [152; 154; 188], an organization of special knowledge [37; 210], features of control and

self-control [178; 179; 186].

The existence of correlations between the indexes of physical state of pupils and a level of development of separate cognitive qualities gave scientists a chance to develop a method of combined physical and cognitive abilities during the process of physical exercises perfoming. Especially, A. A. Pivovar [156] – the author of classes model with the use of available kinds of physical exercises for children, exactly: main movements, active games, games-relays in a combination with tasks, directed on a development of cognitive processes with the use of sports-game method that is specific for competitive activity.

In the scientific works, the organizational and methodic basics of fitness and therapeutic work with schoolchildren, pedagogical conditions of improvement a physical education of pupils of general educational schools, development of a pupil as a personality are analyzed in the interaction of physical and aesthetic education [170; 171; 201].

The study results of A. V. Vindiuk [6], O. O. Vlasiuk [199], O. V. Mischenko [124] testify that the use of interdisciplinary ties promote an increasing of childish interest to the learning of general educational disciplines, promotes an education of positive motivation to the PE classes, helps to increase an activity, strengthen health and maintain an academic achievement of pupils on the proper level.

Despite of such wide spectrum of researches, scientists are sure that for the improvement of physical state and health of pupils, it is necessary to increase motion activity due to the individual classes of physical exercises. The study results of V. V. Zahozhyi [213] testified that an organization of seniors' readiness to the individual classes of physical exercises – purposeful and structured process that comprises an organization of motivation to the activity, digestion of theoretical knowledge and practical skills, increasing of physical training and functional possibilities.

Methods of a preparedness organization of schoolchildren to the separate classes of physical exercises that was developed on the basis of analysis of literature sources, practice of work of general educational establishments, also a systemic approach as a methodological basis of research that includes a correlation of all components of academic process due to the following of certain purpose, tasks, principles, methods, means, forms and stages of studying. The organization of motivating and value, cognitive, operating and composite and physical components of seniors' readiness to the separate classes of physical exercises are in the basis of developed methods.

Motivating and value component ensures an organization of value attitude of pupils to the separate classes of physical exercises and development of its motivational basis. Cognitive component provides an organization of knowledge system and development of schoolchildren's thinking. The basis of operating and composite component is learning of skills and abilities to perform physical exercises independently. Physical component of readiness ensures a successful performing of motion and it is characterized by a proper level of physical development, physical training, functional state, health state. On this basis, there were developed some criterions of senior's readiness to the separate classes of physical exercises.

Motivating and value component readiness is in the interest to a physical culture, motives of physical exercises performing, directivity of value orientations, systematic character of physical loading; cognitive – extent of knowledge in comparison with a fixed example, using of knowledge during the PE lessons and separate lessons of physical exercises; operating and composite – extent of skills, quality of motion actions performing; physical – level of physical state and health of pupils.

P. P. Kohanets [14] testified scientifically the pedagogical conditions of an organization of physical and strong-willed skills of children in the process of directed physical training that are directed on the combined development of physical and strong-skilled possibilities, expected a using of game form that is regarded as a pedagogical process, directed on the improvement of skills and abilities of a general method.

In the scientific works, the considerable attention is paid to the problems of posture correction of pupils by means of physical culture [1; 75; 146]. V. O. Kashuba [75] formulated firstly a conception of preventionism and correction of biogeometry profile of posture of school aged children; its characterized features are a creation of control methodology taking into account the individual peculiarities of motor skills of pupils, an orientation to the spatial organization of body bioelements, a preventionism of scoliosis dependent on the influence of gravitational factors. V. V. Petrovych [146] made up a correction program of sagittal profile of posture that was realized for four stages: a diagnostics of sagittal profile of posture, a development of correction program, a practical realization, a repetitive diagnostics. The main means of correction were complexes of physical exercises, active games, complexes of exercises for a preventionism of platypodia and also classes of fitball-gymnastics.

N. V. Karachevska [74] studied an effectiveness of model of educational

and game environment in the training of emotional-willed qualities of younger schoolchildren during the PE lessons. The model expected tree intersubordinate and interresulting blocks: theoretical and methodological, psychological-pedagogical and technological. L. L. Lysenko [109] testified the conception of organization of movement culture as a system of control process of teaching motion actions on the basis of creative using of self-regulation conditions and pedagogical influences. According to this conception, a place of construction, principles of functioning and a content algorism of creative and adaptative technologies of studying the movement culture were developed. A general scheme of studying is fully affordable for a realization during the studying of the basics of rhythmic gymnastics for girls of average age.

Game direction of physical training of pupils in the general educational establishments was a subject of scientific researches [94]. Game activity is regarded as a process of studying and education with the use of game exercises that are performed in different forms of physical culture. Game exercises of qualifying influence were systematized dependent on the age of pupils and program material on the subject of physical culture that gave a chance to use a related method of movement learning and to educate some physical abilities.

Scientists consider [56; 107; 203] that one of the most important ways of optimization a physical education of schoolchildren – a formation of need and positive motivation to do physical exercises. H. V. Bezverhnya [20] revealed a structure of motives to the PE lessons and sports for boys and girls 11-17 years that has an aged dynamics with different component placement, peculiarities of demonstration dependent on a constant (sex, type of higher nervous system, residence place), however it is always determined by general hierarchy of formation that is inherent for modern teenagers: foreground motives are health improvement (51%), body shape improvement (42%), achievement of high sports results (24%), communication with friends and active pastime (18-19%).

S. A. Bilitiuk [26] defined the incentives to physical education of schoolchildren which he divided into external and internal. External incentives are determined by the quality of physical education of pupils, promotion of studying activity of children (demand, encouraging, punishment, games and evaluation), level of physical state of schoolchildren, family attitude to the physical education and sports. Internal incentives – interest and motivation to the performing of physical exercises, needs, value orientations of children. Higher level is a self-stimulation that is determined by a separate performing of

physical exercises. Madiated influence on the incentives of physical education of schoolchildren is exerted by social and cultural field of society, a state of sports achievements and sports-massive work in the country and at school; a health level of population, a content of studying material, an educational system of school, a level of professional skills of a teacher.

Technology of formation the motivation to lessons of physical exercises expected a solution of such problems: a creation of positive emotional background during the lessons; a formation of special knowledge and skills; a promotion of children's activity in the process of performing the physical exercises; an attraction of schoolchildren to the separate classes of physical exercises; a cooperation of teacher and parents in the creation of incentives of children to the classes of physical exercises.

The example of family surrounding [38] is a kind of relational mean of creation a conscious attitude of children to their health. Systematically important ways of pedagogical technology of family and school cooperation – motivational, constituent and organizational-procedural components that are kinds of subsystems of personal oriented education of conscious attitude of schoolchildren to a health promotion.

Separate recommendations about an improvement of extracurricular work of physical education of schoolchildren are presented in the scientific works.

O. B. Lohvynenko [105] defined an essence of culture studies approach in physical education of pupils, developed a theoretical model of physical culture in the extracurricular work, and pointed the functions, content and methods of head teacher activity about the education of physical culture of teenagers.

The analysis of content, forms and particularity of innovative approaches in the organizational provision of sport-therapeutic work in the out-of-school establishments allowed B. L. Marynych [117] to testify and prove a necessity to use complex innovative projects «Health generation», «Summer school of joy and health», «School of joy and health» for hobby clubs of different courses of extracurricular education that are realized with a help of attraction the shift contingent of pupils with a purpose to join more children during an academic year and involve them to the therapeutic activity. In the cooperation with the day-care centers and children's camps for the reason of agreement between out-of-school and general educational establishments, a health improvement and recreation, health-improving knowledge and practice are integrated into the content of curriculums of hobby clubs of different courses. Introduction of innovative approaches in the organizational provision of sports and therapeutic work in the conditions of out-of-school establishments is carried

out for the reason of using some new organizational forms of sports-massive work; taking into account the measures about a creation of values of physical culture; a provision of development of individual peculiarities of pupils; a cooperation of hobby clubs leaders, teachers of schools, pupils and their parents with help of social pedagogues, psychologists, physical rehabilitation specialists.

Developed authorial curriculums of physical-sports and therapeutic courses of out-of-school education «Wellness volleyball», «Wellness gymnastics», «Be healthy», «Sports at leisure», «School of joy and health» are structural and systemically important elements of complex innovative projects. Due to the expert survey, a sanitary directivity of curriculums is determined, it is provided by introduction of complex nature of influence on a personality (25.4%); provision of proper level of motion activity (23.7%); spirituality of educational content to teach a health value (18.7%); development of short-term curriculums for a shift contingent of pupils to encourage more children (16.3%); modernization of content of curriculums including new kinds of sports (10.7%); inclusion of sanitary component in programs of all courses of out-of-school education (5.2%).

In the study of T. V. Palahniuk [139], the modern requirements to the carrying out of cultural-sports work among schoolchildren are revealed; the optimization of educational process is clarified on the basis of adequate use of traditions of Ukrainian folk physical culture; it is proved that cultural-sports work as a complex form of solving the pedagogical tasks of education has deep traditional roots in Ukrainian pedagogics. So, a classification of cultural-sports events on the ethnic base is developed and testified theoretically. Pedagogical features of content, forms, methods and means of cultural-sports work are studied due to its enrichment of folk-pedagogical knowledge of physical education.

P. M. Martyn [116] studied the organizational-pedagogical features of physical education of senior pupils in modern youth organizations. It is specified that it is realized with the help of such organizational forms like tourist walk and hike, camps, sports sections, fitness-therapeutic events within the limits of cultural-religious, historical and state holidays. Tourist walks are on foot, on kayaks, by bikes, horses, cars. Within the year, camps are held and they are divided into summer and seasonal, steady-state and mobile. Sections of alpinism, combat hopak, sports orienting, Cossack martial arts, horse sports, football, volleyball, basketball, chess, etc. Organizational forms of physical education in youth organizations are differed by a variety that

depends on a direction of their activity and material possibilities.

Fitness-sports work in youth organizations are held considering aged peculiarities of their members and also ideological foundations of the organization. Due to the age, members of youth organizations can be as an object as a subject of educational process in different forms of physical education, particularly in recreational, ecological, ethnographic, educational and training camps and their content differs by its pedagogical course. According to the ideological bases of youth organizations, there are some distinctions in the organization by their members the fitness and therapeutic events within the limits of cultural-religious, historical and state holidays.

H. M. Putiatina [154] studied an optimization of organizational activity of sports school on the basis of management by results. Firstly, a regional objective complex program and a perspective complex plan of optimization the management of sports schools in Ukraine were developed on a scientific basis, also the indexes of effective activity of such schools were analyzed and complemented.

The question of physical education organization in the aftercare groups is studied also in the scientific works. A. P. Havriliuk [62] developed some methods how to carry out lessons of physical education in the system of sanitary aftercare group that includes a use of game and competitive methods, means and methodic ways of physical exercises performing.

So, a development of ways how to improve an effectiveness of different forms of physical education of pupils in general educational establishments is in the basis of the majority of scientific studies of physical culture. Scientifics confirm that it is possible to encourage pupils to the systematic PE lessons in the out-of-school activity on the basis of motivational and value priorities.

CHAPTER 2
CHARACTERISTIC OF DAILY MOTION ACTIVITY OF TEENAGERS AND FACTORS THAT CAUSE IT

2.1 Features of daily motion activity of teenagers

Motion activity combines various movements that are performed in everyday life and labor activity. It plays an important role for an optimal functioning of human organism and it is a basis of healthy life. Motion activity is determined by a sum of movements that a human performs during the vital activity.

During the motion activity, scientists use different criterions and methods that give a chance to get objective enough information and do not need complicated equipment. They include a duration of motion component in daily «budget» of time that is like a time unit (in minutes, hours) or in the per cents relatively (24 hours) the day duration. Last time a continuous registration of frequency of cardiac contractions and a determination of pulse «cost» of different kinds of activity including a total quantity of daily motion activity [92].

Methods of time-study are based on the registration of kinds of human activities during the day. It gives a chance to get full information about duration of a separate kind of activity, leisure, physical loading, etc. Such range of chances allows classifying methods of time-study as objective, accurate and informative.

Scientists of Framingham University developed the methods of time-study for children and teenagers to determine a daily motion activity, they are based on the registration of kinds of human activities during the day. Teenagers have such levels of motion activity:

- basic level (BL) – sleep, rest in the lying position;
- sedentary level (SL) – travel in a transport, reading, drawing, watching TV programs, table and computer games, nutrition;
- low level (LL) – personal hygiene, lessons at school (except PE and craft), walking on foot;
- average level (AL) – homework, strolls, morning gymnastics, moving breaks at school;
- high level (HL) – classes of physical exercises during specially organized classes, intensive games, running, sledding, skating, cycling, skiing, riding a scooter, rollerblading, etc.

To define an amount of time that is spent on each kind of motion activity, a daily time-study of kinds of human activities was conducted: having fixed sections of time that were spent on each kind in such sequence as they alternate. Using Framingham methods (Appendix A) of determination of motion activity on the basis of time-study of different levels of motion activity during the day, here is a chance to compare these indexes of teenagers 11-15 years.

Study results testify that a structure of daily motion activity of girls consists of a basic regime (8.31-8.58 hours), sitting (6.27-6.49 hours), low (6.17-6.58 hours), average (2.32-2.52 hours) and high (0.33-0.4 hours) (table 2.1). Boys have the similar indexes. Particularly, a basic level constitutes 8.42-8.55 hours, sitting 6,29-5,3 hours, low 6.37-7.22 hours, average 2.47-2.57 hours and high 0.36-0.47. In general, boys have a bit higher indexes of high and low levels of motion activity.

Specially organized motion activity that in our study corresponds a high level of activity, includes different forms of classes of physical exercises, walking to school and home, strolls.

A daily two-hour size of motion activity for pupils is recommended that would provide a physical need of organism in a physical loading. In general, the dynamics of specially organized motion activity is presented on the figure 2.1. In different aged periods, levels of organized activity are not the same.

Table 2.1

Structure of daily motion activity of teenagers, *hours*

Level of motion activity	Sex	Age, *years*				
		11	12	13	14	15
Basic	G	8.49±0.03	8.42±0.04	8.31±0.05	8.58±0.04	8.43±0.05
	B	8.42±0.04	8.55±0.03	8.49±0.04	8.53±0.05	8.47±0.05
Sedentary	G	6.33±0.32	6.5±0.37	6.49±0.36	6.27±0.43	6.27±0.54
	B	6.29±0.37	6.14±0.29	5.33±0.33	5.3±0.37	5.54±0.45
Low	G	6.35±0.41	6.17±0.36	6.44±0.39	6.48±0.42	6.58±0.34
	B	6.48±0.35	6.37±0.25	7.19±0.31	7.22±0.29	7.14±0.36
Average	G	2.48±0.21	2.52±0.24	2.36±0.29	2.32±0.18	2.39±0.24
	B	2.51±0.33	2.57±0.27	2.55±0.31	2.48±0.25	2.47±0.19
High	G	0.35±0.04	0.39±0.05	0.40±0.04	0.35±0.04	0.33±0.03
	B	0.36±0.04	0.37±0.04	0.44±0.05	0.47±0.03	0.38±0.05

In the practice of school physical education, a specially organized motion activity of teenagers constitutes 0.33-0.44 hours, that is by 65-70% lower than a hygienic standard.

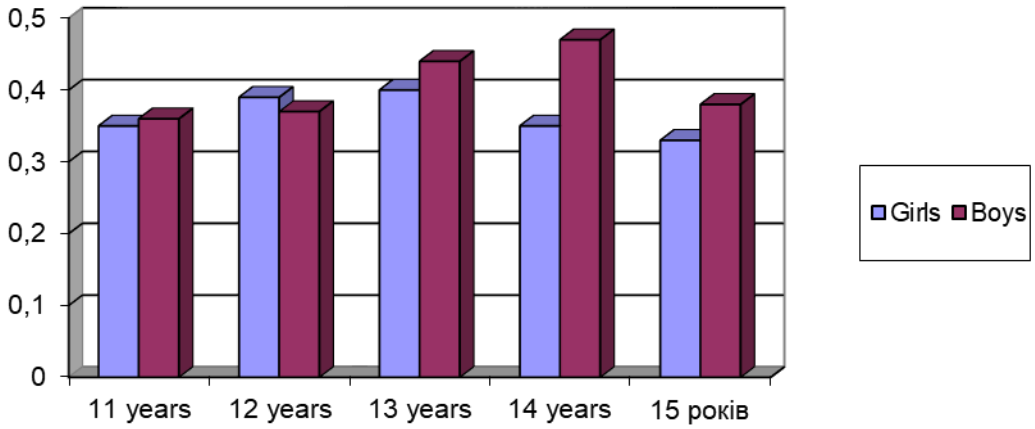


Figure 2.1. Aged dynamics of specially organized motion activity of teenagers

To calculate an index of daily motion activity of teenagers, a number of hours spent on each kind of activity multiplied by a weighting coefficient of some activity (Appendix A). On the basis of allocations there were received indexes of motion activity by each kind of activity and index of daily motion activity in general (table 2.2, table 2.2).

Table 2.2

Indexes of motion activity of teenagers due to each kind of activity, *points*

Level of motion activity	Sex	Age, *years*				
		11	12	13	14	15
Basic	G	8.49±0.03	8.42±0.04	8.31±0.05	8.58±0.04	8.43±0.05
	B	8.42±0.05	8.55±0.04	8.49±0.05	8.53±0.03	8.47±0.04
Sedentary	G	6.96±0.28	7.15±0.29	7.14±0.33	6.9±0.38	6.27±0.47
	B	6.92±0.32	6.75±0.38	5.86±0.34	5.83±0.17	6.09±0.29
Low	G	9.53±0.35	9.25±0.33	9.66±0.35	9.72±0.41	6.58±0.42
	B	9.72±0.27	9.56±0.41	10.78±0.25	10.83±0.21	10.71±0.32
Average	G	5.95±0.32	6.05±0.27	5.66±0.22	4.72±0.25	2.39±0.36
	B	6.02±0.31	6.17±0,38	6.12±0.35	5.95±0.18	5.93±0.27
High	G	1.75±0.03	1,95±0.04	2.0±0.03	1.75±0.04	0.33±0.04
	B	1.8±0.03	1.85±0.05	2.2±0.04	2.35±0.05	1.9±0.04
Index of motion activity, *points*	G	32.68±0.43	32.82±0.47	32.77±0.33	31.67±0.42	32.58±0.38
	B	32.88±0.35	32.89±0.43	33.45±0.47	33.49±0.38	31.1±0.29

In general, indexes of daily motion activity of pupils 11-15 years are found in 31.1 – 33.49 points. The shown index of boys is by 0.61 – 5.75% higher than of girls. The largest difference is observed at the age of 13-14 years.

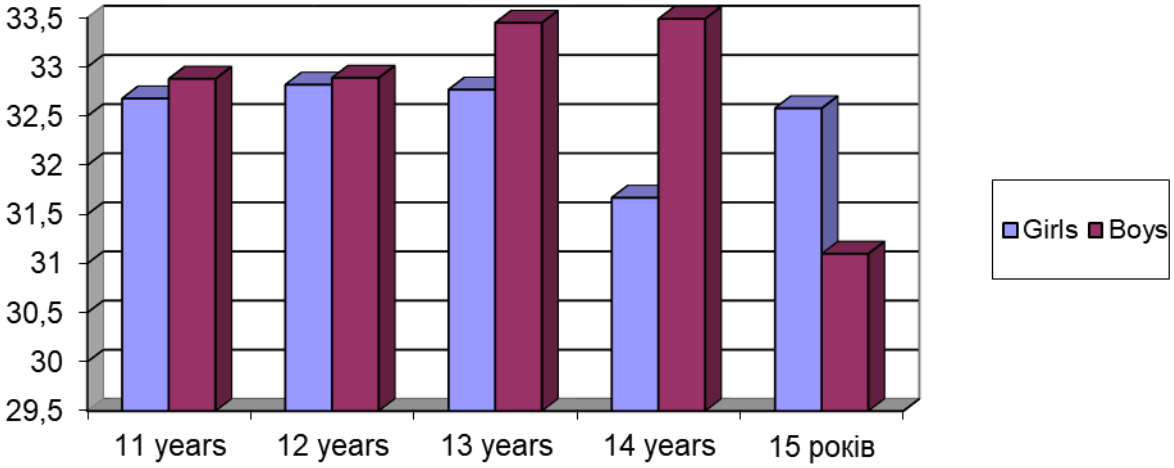


Figure 2.2. Dynamics of index of daily motion activity of teenagers

The analysis of study results testified some minor changes of an index dynamics of motion activity of teenagers in different aged groups. The index of daily motion activity of girls increases till 12 years after that it reduces gradually. The highest level of physical activity of boys is observed at the age of 13-14 years after that a decline of results is observed. It is possible to suppose that a decline of motion activity is related to a decline of interest and motivation of schoolchildren to a physical education.

The analysis of study results testifies that the traditions of physical education at school, an existing resource base, a level of professional skills of PE teachers, pedagogical workers, and school officials have influence on a level of motion activity of pupils. Also, it is related to an underestimation of sanitary and educational role of physical culture, and incomprehension of the fact that a motion activity depends greatly on us.

Scientific works established that a training effect has only a high level of motion activity that includes the organized PE classes and intensive sports and active games. At the same time, this component of motion activity exists in the majority of teenagers only like compulsory PE lessons. If there isn't sometimes a lesson, then a high level of motion activity is absent.

Having determined a level of motion activity, it is possible to suppose that it is insufficient and doesn't promote to maintenance of proper functional state of organism. Improvement of motion field contributes a development and activity muscles, improves functions of different internal parts of body and systems. Active muscle activity causes an intensification and consolidation of work of cardiovascular, breathing and other systems and in general defines a physical state of pupils. That's why it is necessary to define a physical state of teenagers at the age of 11-15 years subsequently.

2.2 Level of physical state of teenagers

In the modern scientific literature [193; 212], a term «physical state» is widely used although there is no a single-valued approach to its characteristics. It depends on plenty factors: natural and socially caused. Principally, a physical state is regarded as a result of interaction of the different aspects of human activity (strength, speed, coordination, agility and endurance), adaptive abilities of organism and its functional possibilities that provide a successful realization of motion tasks.

According to a definition of International Committee of tests standardization, a physical state characterizes a personality of human, a health state, a constitution, functional abilities of organism, a physical working ability and a readiness. In general, scientists underline tree main groups of indexes of physical state: physical, anthropometric and physiological. That's why a physical state can be determined as integrated characteristics of vital activity of organism that is defined by a physical readiness, a physical development, and functional abilities of schoolchildren organisms.

Physical readiness – a result of physical training that can be reached due to the training of motion skills and increasing of level of working ability which are necessary for people to master and perform some kinds of activity. General physical readiness characterizes a level of development of main physical qualities and skills that are necessary in the process of human vital activity. It is a result of human physical activity, its integral index because almost all organs and systems of organism are in the interaction during the process of physical exercises. Aged period of 11-15 years is the most advantageous for the development of practically all physical abilities. There were used movement tests (table 2.3), directed on the evaluation of each physical quality to determine a physical readiness of teenagers.

Table 2.3

Level of physical readiness of teenagers, $(\overline{X} \pm S\overline{x})$

Index	Sex	Age, *years*				
		11	12	13	14	15
Hanging pull-up lying, *times*	G	3.12±0.32	5.02±0.41	6.63±0.35	5.78±0.42	5.97±0.47
Hanging pull-up, *times*	B	3.67±0.37	3.95±0.52	4.28±0.44	4.83±0.47	7.51±0.52

Table 2.3 continuation

Index	Sex	Age, *years*				
		11	12	13	14	15
Bent arm hanging, s	G	9.25±1.82	13.18±1.73	10.51±1.87	10.49±1.69	9.08±1.84
	B	19.05±1.58	15.49±2.05	18.21±1.94	17.55±1.76	29.43±2.36
Standing long jump, *cm*	G	111.6±2.49	123.4±2.97	135.6±3.02	133.2±2.87	137.3±2.85
	B	154.2±2.89	160.3±3.06	167.2±2.58	182.4±3.29	201.1±3.03
Lifting the torso in a sitting position in 30 s, *times*	G	11.26±0.53	11.24±0.65	14.19±0.55	12.45±0.63	11.59±0.58
	B	19.42±0.49	18.03±0.62	18.41±0.53	19.74±0.37	20.68±0.45
Running 1000 m, *min, s*	G	8.52±0.28	8.32±0.21	8.05±0.23	8.09±0.25	8.12±0.23
Running 1500 m, *min, s*	B	10.05±0.23	9.39±0.18	9.33±0.17	9.15±0.23	9.47±0.21
Shuttle run, 4 x 9 m, s	G	12.79±0.28	12.37±0.32	13.02±0.35	12.15±0.26	12.37±0.24
	B	11.12±0.31	11.57±0.29	11.83±0.33	11.52±0.27	11.32±0.24
Running 60 m, s	G	11.49±0.19	11.31±0.17	11.47±0.26	11.24±0.28	11.36±0.22
	B	10.44±0.14	10.33±0.22	10.56±0.31	10.32±0.2	10.02±0.18
Seated forward bend, *cm*	G	4.37±1.03	5.74±1.12	8.49±1.63	8.91±1.59	11.55±2.04
	B	1.23±0.57	1.56±0.73	3.68±0.65	4.85±0.83	7.49±1.04

Strength (an ability to overcome an external resist or counteract it with a help of muscle efforts) is an important index of physical readiness. In the work, authority and power, rapid and power qualities of pupils were studied. The significant role of strength training is that a necessary muscle bulk is gained and it provides not only body movements and also an energy production.

Insufficient development of strength leads to a development of metabolism diseases, spine diseases, a disturbance of functions of celiac cavity organs. Physical loading of strength directivity has a positive influence on a decline of neurosis, psycho-emotional overloads, adaptation to the life conditions.

Study results testified that girls 11-15 years perform strength test tasks with such indexes: hanging pull-up lying 3.12-6.63 times, bent arm hanging – 9.08–13.18 s, standing long jump – 111.6–137.3 cm, lifting the torso in a

sitting position in 30 s – 11.24–14.19 times. Boys have these indexes much better than girls. Particularly, hanging pull-up 3.67–7.51 times, bent arm hanging – 15.49–29.43 s, standing long jump – 154.2–201.1 cm, lifting the torso in a sitting position in 30 s – 18.03–20.68 times.

The dynamics of strength development of children 11-15 years is presented on the figure 2.3, 2.4, 2.5. The results of testing evidenced that the indexes of pull-up bar of girls increases till 13 years, after that a stabilization comes.

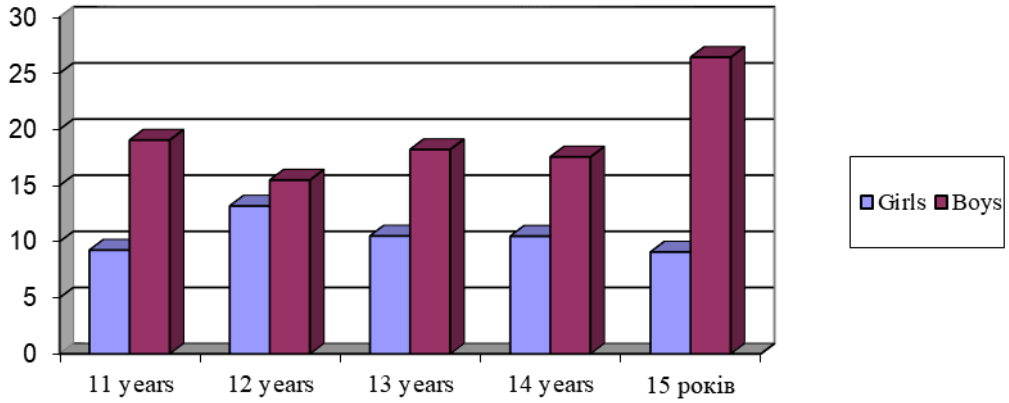


Figure 2.3. **Aged dynamics of strength development of teenagers (due to the results of bent arm hanging)**

Intensive increasing of the results based on bent arm hanging is found at the age of 11-12 years. Test results «lifting in sitting position» increase from 12 till 13 years. Similar tendency is found due to the data about standing long jump. Boys have the most increasing results in the following aged periods: hanging pull-up bar – 14-15 years; bent arm hanging – 11, 14-15 years; standing long jump – 13-15 years; lifting in sitting position in 30 s – 11 years.

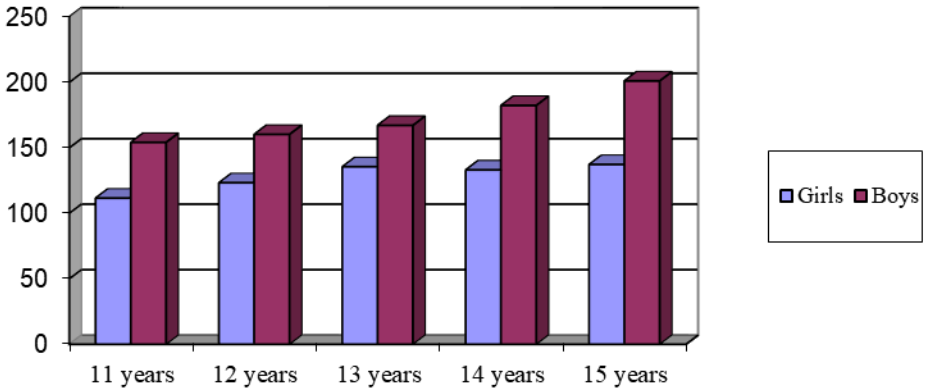


Figure 2.4. **Aged dynamics of strength development of teenagers (due to the results of standing long jump)**

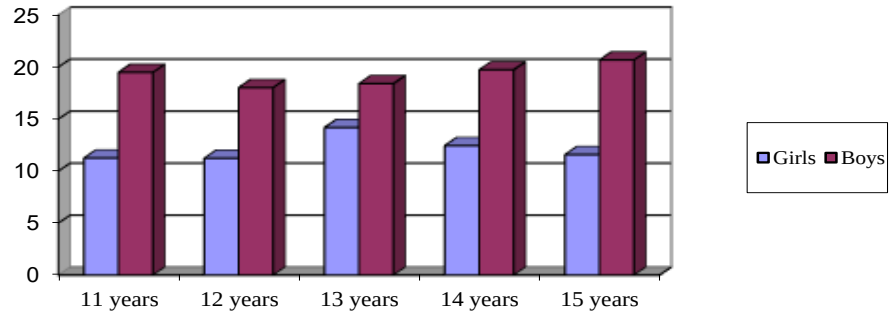


Figure 2.5. **Aged dynamics of strength development of teenagers (due to the results of lifting in sitting position in 30 s)**

So the strength qualities of girls of average age increase intensively till 13 years, boys – 14-15 years. Stabilization and partial decline of testing results are being kept track in the other aged periods.

Received results were compared with the requirements of curriculum of physical education in the general educational establishments (table 2.6, 2.7). Study results testify that a level of strength development of girls vary from 1 to 10 due by the twelve-point scale of marks. A bit higher results are found due to the bent arm hanging. The competence level of pupils is evaluated as sufficient due to this testing.

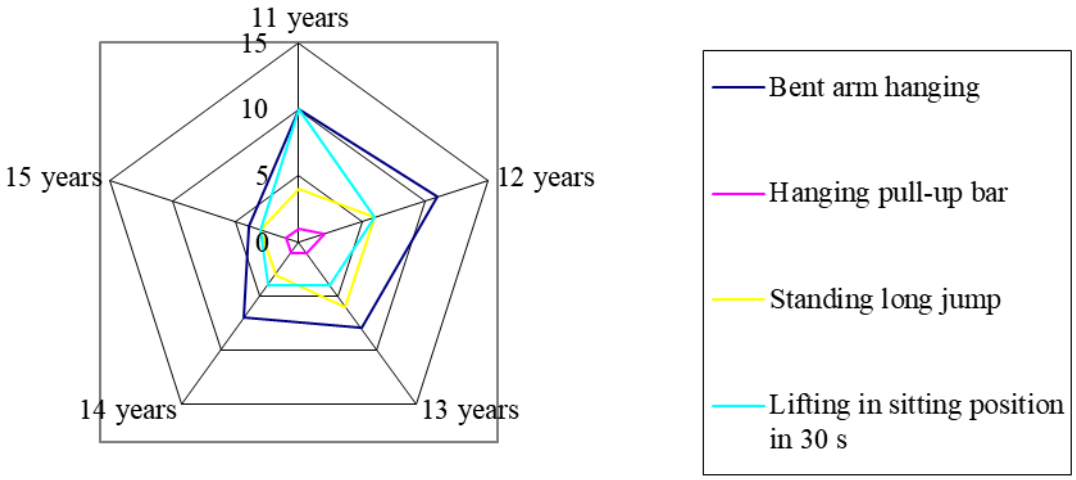


Figure 2.6. **Evaluation of strength qualities development of girls 11-15 years**

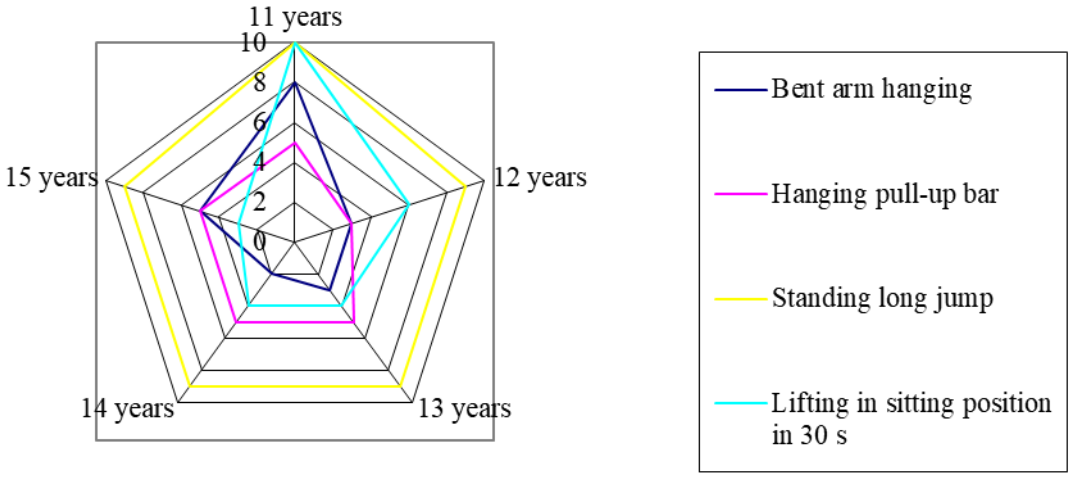


Figure 2.7. **Evaluation of strength qualities development of boys 11-15 years**

According to the other testing methods, girls got lower marks that correspond to an average level of competence mostly. Especially, girls do badly such tests: hanging pull-up lying, lifting in sitting position in 30 s. Standing long jump of boys got the highest evaluation due to the school curriculum (9-10 points). Boys got marks in average 4-6 points of the other tests and it corresponds to an average level of studying achievements.

So testing results testify that a level of strength development of teenagers is different and it changes due to the growing and development of organism. That's why the pupils of 11-15 years are characterized by irregular development of strength abilities.

The endurance is characterized by a human ability to perform work for a long time without an efficiency decline. General endurance is based on a function of aerobic system that includes: heart-vascular, breathing and blood circulation. That's why people with a low level of endurance development suffer more often from hypertension and atherosclerosis and other diseases.

Testing results testify that girls 11-15 years overcome the distance 1000 m on average in 8.05–8.52 min., boys – in 9.15–10.05 min. In general, a tendency to results increasing of endurance is observed for boys and girls till 14 years after that stabilization and even a minor degradation of indexes come (figure. 2.8).

According to the requirements of school curriculum, endurance development has a low or average level of competence (figure 2.9.). On average pupils got only from 1 to 4 points due to the testing results.

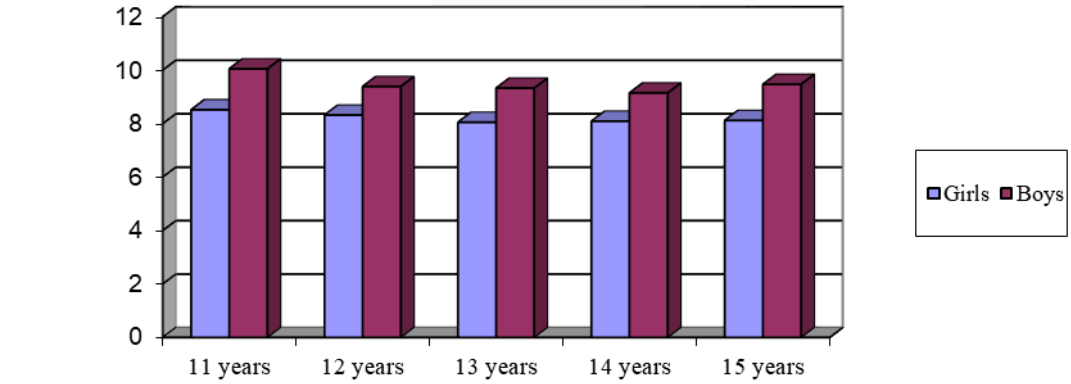


Figure 2.8. Aged dynamics of endurance development of teenagers (due to the results of running 1000 m (girls), 1500 m (boys)

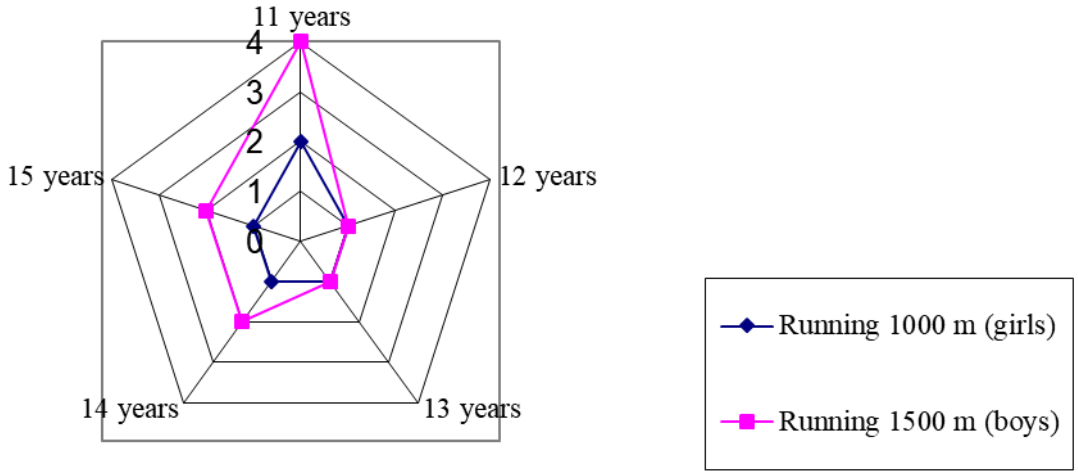


Figure 2.9. Evaluation of endurance development of teenagers

Education of ability to the demonstration of speed in the complete motion activity is important in the physical culture and therapeutic training. Speed is characterized by an ability to perform maximum quantity of movements for some space of time. This quality has an exceptionally important meaning in cyclic motion actions. That's why, a research of speed was based on the analysis of running (60 m) indexes dynamics of teenagers.

Running (60 m) results of pupils are 11.24–11.49 s (girls) and 10.02–10.56 s (boys). Speed development of girls 11-15 years is not characterized by precise regularities of changes (minor increasing was observed only at the age of 12 and 14 years) (figure 2.10). Intensive increasing of speed development of boys was found at the age of 13-15 years. Changes constitute 5,39%.

In general, according to a school curriculum a level of speed development of schoolchildren is a bit higher and mostly corresponds to a sufficient level (figure 2.11). The exception is only the testing results of girls 14-15 years that are evaluated by an elementary level of studying achievements.

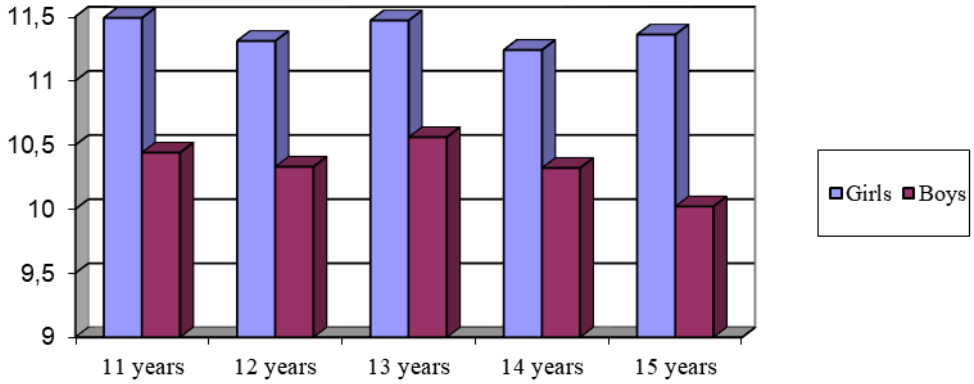


Figure 2.10. Aged dynamics of speed development of teenagers (due to the results of running 60 m)

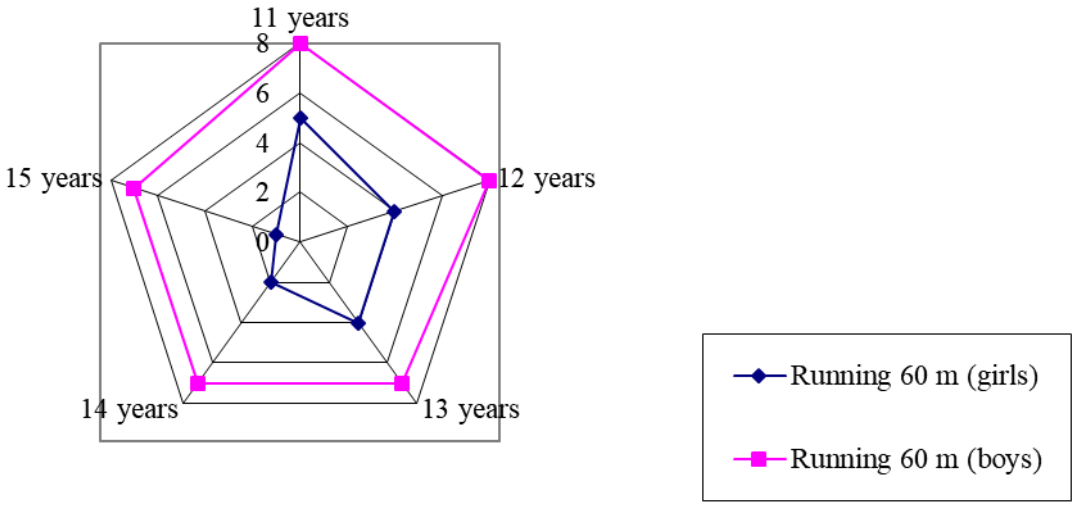


Figure 2.11. Evaluation of speed development of teenagers

Successful solution of motion problems depends firstly on ability to perform some movements organically, simultaneously and sequentially. Meanwhile, motion actions can be performed due to a precise scheme or non-standard, depending on a situation that is during the process of motion activity. Thereby, agility (human ability to digest quickly new complicated coordinating motion actions and rebuild the activity due to the changed circumstances) has an important meaning in the educational and sanitary activity.

The study results testify that pupils perform a shuttle run 4x9 м in 12.15–12.79 s (girls), 11.12–11.83 s (boys) (figure 2.12). Relatively intensive period of agility increasing for boys is observed at the age of 13-15 years. Expressed period of agility development is not observed for girls.

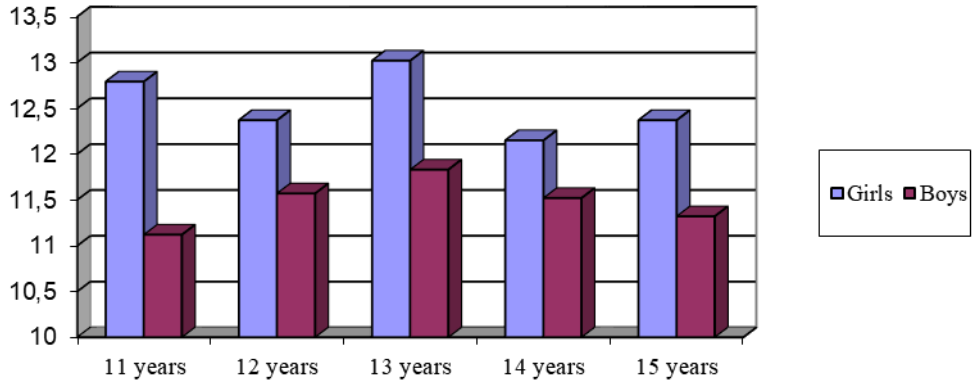


Figure 2.12. Aged dynamics of agility development of teenagers (due to the results of shuttle run 4x9 m)

Testing results confirm that an agility development of teenagers is on the elementary and average levels. It is necessary to specify that such a state is peculiar for all aged groups of pupils (figure 2.13).

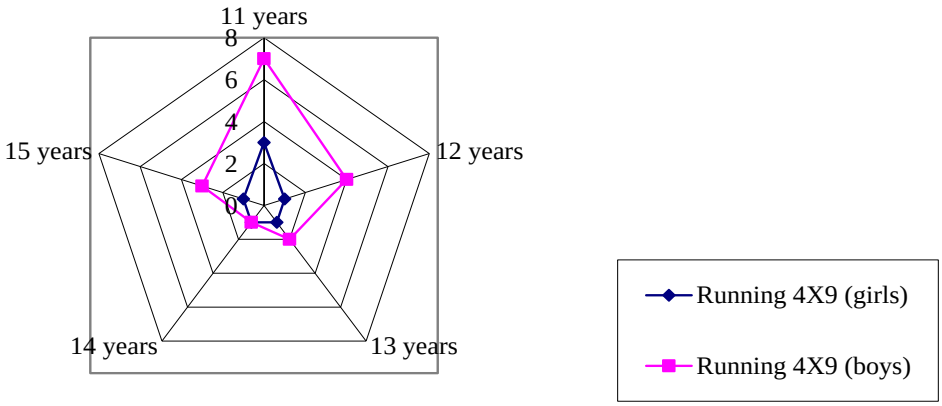


Figure 2.13. Evaluation of agility development of teenagers

State of physical training and health of schoolchildren in some way depends on the muscle elasticity and a connection that is characterized by such physical quality, flexibility (human ability to perform movements in the joints with large amplitude). At the same time, because of insufficient muscle elasticity, humans can't realize these possibilities completely.

Measurement results gave reasons to state that pupils 11-15 years perform testing exercise for an agility evaluation dye to such indexes: girls – 4.37–11.55 cm, boys – 1.23–7.49 cm (figure 2.14). Flexibility increases gradually but not unequally. Girls have the most expressed periods of flexibility development at the age of 11-13; 15 years, boys – 12–15 years.

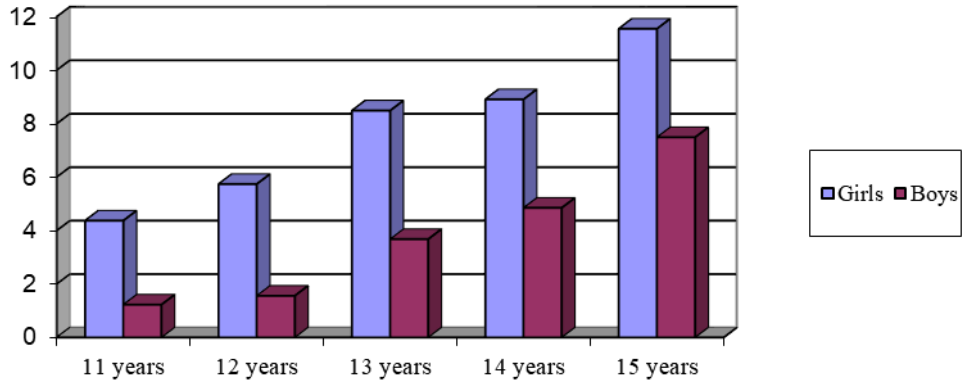


Figure 2.14. **Aged dynamics of flexibility development of teenagers (due to the results of seated forward bend)**

The conclusion of the study results is that a flexibility of girls is developed insufficiently and evaluated by elementary and average levels (figure 2.15). The lowest marks were received at the age of 11-12 years.

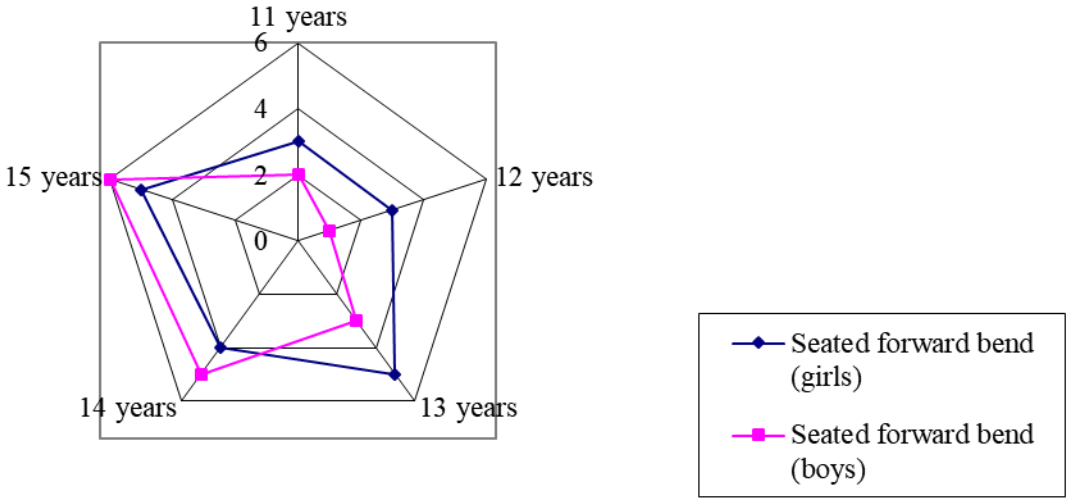


Figure 2.15. **Evaluation of flexibility of development of teenagers**

So, it is necessary to denote that a tendency of decline of physical training level of teenagers conditions a necessity of the development of sanitary and correction physical loading.

Performing of physical exercises is accompanied by a work of many functional systems of human organism: cardiovascular, breathing, metabolic and other. They provide the energy of working muscles, constancy of internal environment of the organism. Consequently, their state changes. In the wide sense, it is a reaction of functional systems on the external and internal

influence that are directed on a conservation of organism unity and provision of its vital activity in concrete conditions [195].

Functional state of organism – an objective index of training that develops as a consequence of systematic classes of physical exercises and causes the most effective performing of concrete motion actions. In order to determine a state of cardiovascular and breathing system, a systolic and diastolic arterial tension, a breath holding were measured, a frequency of cardiac contractions was counted and these ways of study are the most common and the simplest.

The level of functional state of cardiovascular and breathing systems is presented in the table 2.4. Study results testify that the frequency of cardiac contractions of pupils is 81-89 bpm. The authentic difference between the testing indexes of boys and girls wasn't revealed. During the studying at school the frequency of cardiac contractions declines that testifies the improvement of heart activity in calmness (figure 2.16).

Arterial tension is a blood tension in the arteries of a greater circulation. The auscultatory methods of Korotkov were used to determine an arterial tension. Maximum (systolic) and minimal (diastolic) tension were measured. The study testified that an arterial tension systolic is within the limits of 95.43 – 131.1 mm Hg (girls), 96.04 – 130.1 mm Hg (boys), diastolic – 50.18–79.5 mm Hg (girls), 49.06–78.08 mm Hg (boys).

Table 2.4

Functional state of cardiovascular and breathing systems of teenagers, $(\overline{X} \pm S\overline{x})$

Index	Sex	Age, years				
		11	12	13	14	15
Systolic arterial tension, *mm Hg*	G	95.43±2.32	101.6±2.75	117.8±2.71	128.6±2.61	131.1±2.08
	B	96.04±1.98	105.7±2.43	116.9±2.85	121.3±3.37	130.1±4.02
Diastolic arterial tension, *mm Hg*	G	50.18±1.32	53.67±1.69	70.05±2.35	72.54±2.08	79.5±2.45
	B	49.06±2.05	53.84±1.43	61.49±2.58	62.93±1.73	78.08±2.04
Heart rate in peace, *bpm*	G	87.5±1.89	86.32±2.04	85.5±1.77	81.54±2.16	82,06±1.74
	B	89.65±2.04	88.46±1.37	85.74±1.58	88.32±2.23	85.51±2.61
Breath holding on breath in, s	G	32.15±2.04	28.63±2.12	34.81±1.93	32.37±1.92	32.86±2.23
	B	34.61±1.52	35.48±1.63	35.73±2.12	41.62±1.87	48.83±2.05
Breath holding on breath out, s	G	24.06±1.83	23.29±1.87	29.03±1.98	25.12±1.85	26,72±2,03
	B	22.31±1.39	20.67±1.56	21.56±2.04	25.89±1.48	24.73±1.76

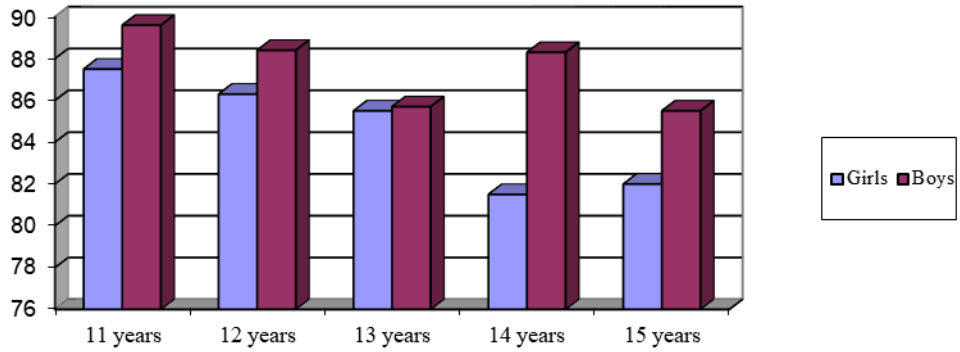


Figure 2.16. Aged dynamics of a frequency of cardiac contractions of teenagers

Received data testified that the pupils were not certainly different due to the dimension of diastolic arterial tension (figure 2.17).

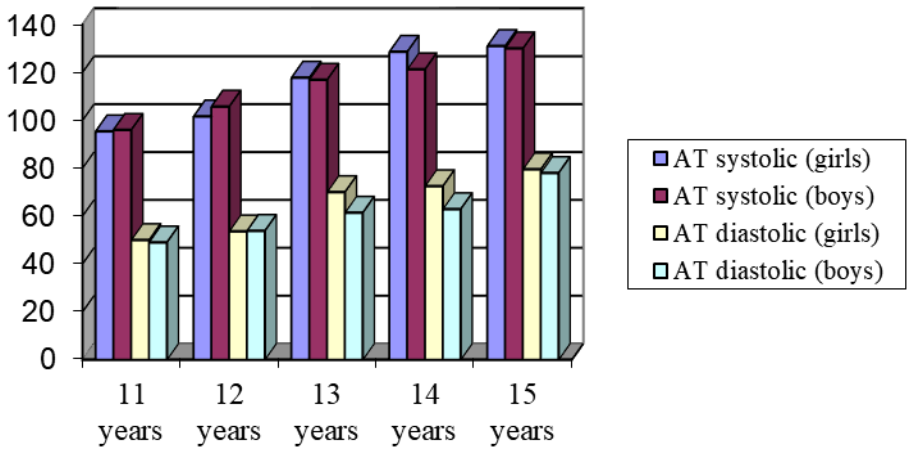


Figure 2.17. Aged dynamics of arterial tension of teenagers

In general, such indexes correspond to the aged standards. One of the reasons of minor oscillations of heart rhythm and its minor changes at the average school age – a gradual improvement of regulatory mechanisms of heart functioning and sexual puberty of teenagers.

Studying the state of functioning of breathing system is necessary and important component characteristics of the determination of functional state of teenagers. Breathing system is an open system of organism that provides a gas exchange, a development of homeostasis in the trachea-bronchial canals, a purification of air that is breathed, from non-indigenous particles and microorganisms, and also an analysis of fragrant substances in the atmosphere.

Study results testify that the endurance of breath holding of pupils on is 28.63–34.81 s (girls), 34.61–48.83 s (boys) (figure 2.18).

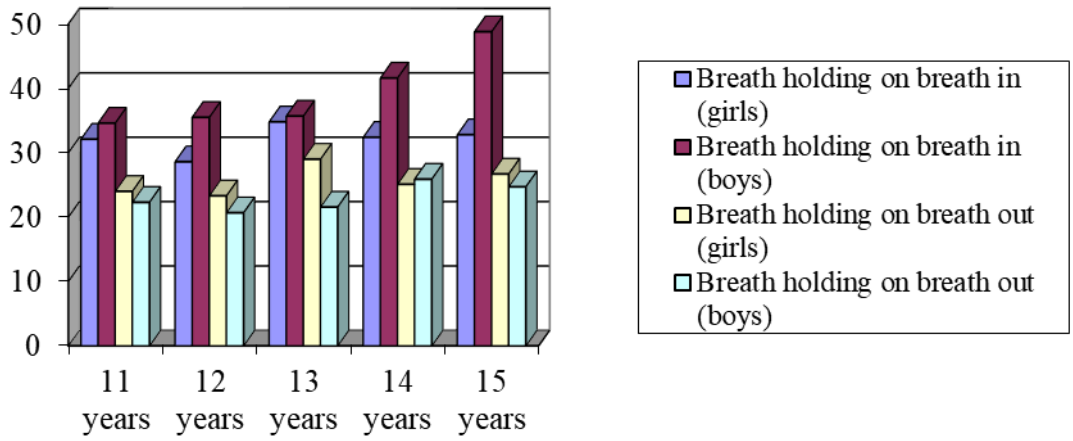


Figure 2.18. **Dynamics of indexes of breathing system functioning of teenagers**

Dimension of breath holding of children on is by 33-65% higher than out. With the increase of years, a tendency of increasing the endurance of breath holding is traced for boys in comparison with girls. The results of testing performing for boys increase most intensively from 13 till 15 years.

So the study results give a chance to claim that the average value of heart rate, arterial tension, breath holding are in the limits of aged standards. At the same time, there is a tendency for a decline of activity of separate functional indexes of teenagers' organisms.

Training and sport activity of pupils in the general educational establishments are resulted from a physical development too. In the broad sense, a physical development is characterized as a process of changing the forms and functions of human organism during the individual life.

Harmonic physical development is resulted from a high general state of human health, physical abilities. Disproportions of physical development are connected with hypertension, excess weight and different diseases. In the current research, a physical development was evaluated by the indexes of body length and weight, body parts circumferences (table 2.5).

Table 2.5

Physical development of teenagers, $(\overline{X} \pm S\overline{x})$

Index	Sex	Age, years				
		11	12	13	14	15
Body length, cm	G	144.7±1.35	148.6±1.93	155.2±2.05	159.3±1.67	166.2±2.24
	B	142.1±0.98	146.8±1.07	154.5±1.32	162.8±1.58	171.7±1.74

Table 2.5 continuation

Index	Sex	Age, years				
		11	12	13	14	15
Body weight, kg	G	35.14±1.35	38.62±1.43	42.66±2.03	46.52±1.84	57.37±2.57
	B	34.63±0.83	38.95±1.04	43.84±1.52	52.49±2.14	61.45±2.25
Circumference of chest (in a state of peace), cm	G	64.32±0.71	67.59±0.79	68.74±0.89	69.93±0.73	71.69±0.85
	B	66.54±0.72	70.11±0.84	71.82±0.75	77.04±0.91	80.27±0.78
Circumference of chest (breath in), cm	G	69.04±0.69	71.73±0.93	72.08±0.95	75.52±1.22	76.69±0.97
	B	70.02±1.75	70.94±1.32	75.37±0.97	80.75±1.01	83.59±1.49
Circumference of chest (breath out), cm	G	62.77±0.73	66.24±0.82	66.83±1.06	67.25±0.92	72.07±0.98
	B	63.22±0.82	68.57±1.11	70.52±1.27	74.9±0.17	79.02±0.86

The study research testified that a body length of girls was 144.7–166.2 cm, boys – 142.1–171.7 cm. In general, these results corresponded the existing aged standards. During the studying, a body length of pupils increases permanently, but irregularly (figure 2.19).

It is necessary to remark that the girls 11-12 years by the height dominate the boys a bit. For five years, the body length of girls has increased by 14.8%, boys – by 20.8%. Intensive periods of this index increasing are revealed at the age of 13-15 years.

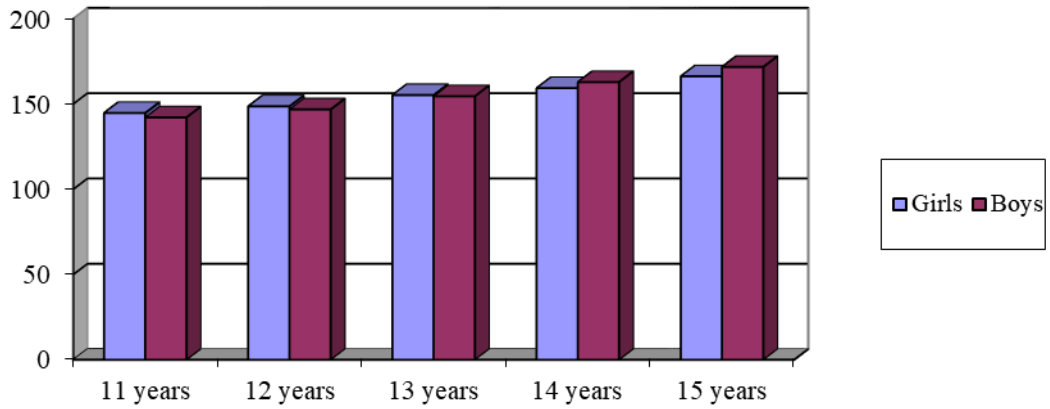


Figure 2.19. Dynamics of body length of teenagers

Body weight is relatively labile index of physical development of schoolchildren since it depends greatly on different diseases, regime changes and nature of nutrition. Received data revealed that a body weight of teenagers is 34, 63–61, 45 kg on average (figure 2.20).

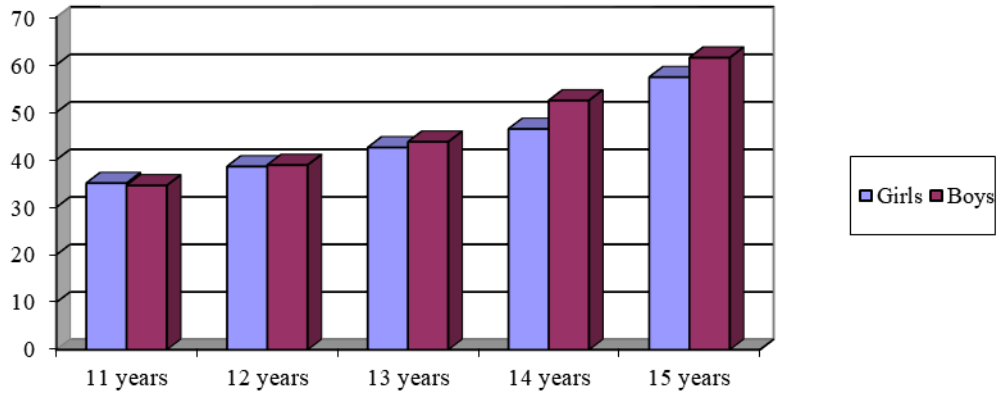


Figure 2.20. **Dynamics of body weight of teenagers**

In general, an essential difference between body weight of boys and girls was not revealed. The highest rates of its increasing are observed at the age of 13-15 years.

The circumference of chest is an important index of physical development of teenagers. Its measurement in the study was conducted in three states: peace, breathe on and breathe out. The measurement results testify that an average value of chest circumference in the state of peace is 64.32 – 71.69 cm (girls), 66.54 – 80.27 cm (boys). In the state of breath in, the results increase and they are 69.04 – 83.59 cm, breath out – 62.77–79.02 cm.

The most intensive increasing of chest circumference is observed at the age of 13-15 years (figure 2.21). In general, a dynamics of chest circumference of teenagers is characterized by a gradual increasing.

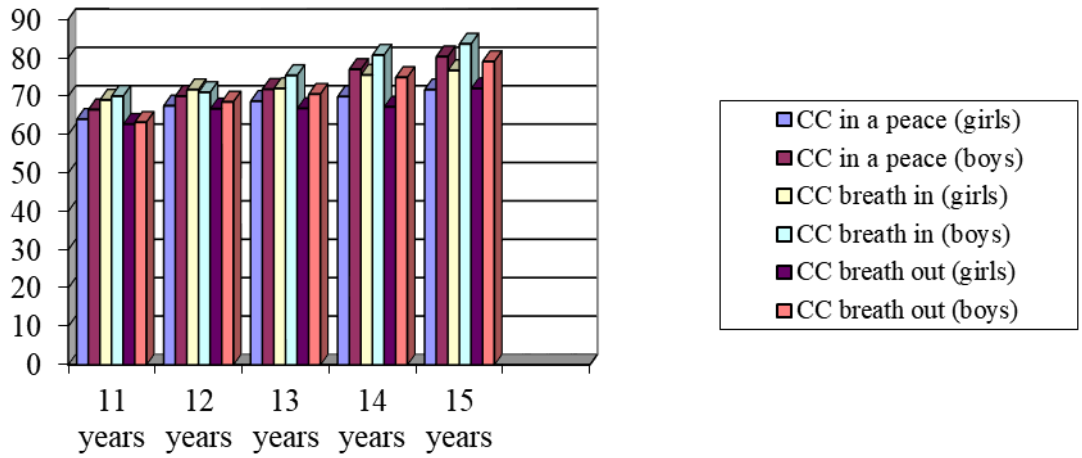


Figure 2.21. **Aged dynamics of chest circumference of teenagers**

So, body length and weight, chest circumference increase gradually but irregularly. Average group indexes generally correspond to the aged standards.

2.3 Motion activity in the structure of motivating-evaluative orientations of teenagers

Education of positive attitude to the physical training and sports for schoolchildren is one of the actual problems of educational process. Classes of physical exercises are being carried out under the influence of some incentives, motivations that are as a motive force of studying activity [162]. Needs, interests, opinions, ideals, value orientations are such motive forces. They form a motivational sphere of studying activity.

Scientific researches [203] and practice of school work testify that an interest of schoolchildren to the physical education is the main in the process of a participation of them to the systematic classes of physical education. Interest – a form of emotional showing of cognitive need that provides a focus of personality on an intimate knowledge and new phenomena.

Subjectively, interests open in a positive emotional desire to know an object more deeply, understand it. The main role of interests is that they are motivating mechanism of cognition and make a personality to search for ways and means of education desire realization. In order to measure a level of interest of children at the average school age to the classes of physical exercises, a questionnaire poll was conducted. The questionnaire poll included a complex of questions which helped to evaluate a level of interest of children at the average school age to the motion activity.

The analysis of questionnaire poll data showed that there is observed a tendency to the decline of interest to physical education for the schoolchildren with the increase of years and especially it is observed for girls. So, 31.7% of boys ad 18.2% of girls at the age of 11 – an interest to the classes of physical exercises is high; children at the age of 12 have a high interest – 26.9% of boys and 19.5% of girls; children at the age of 13 have a high interest – 25.4% of boys and 18.70% of girls; children at the age of 14 have a high interest – 27.7% of boys and 14.3% of girls; children at the age of 15 have a high interest – 23.2% of boys and 9.8% of girls (table 2.6).

Majority of children of all aged groups has an average level of interest to the classes of physical exercises. On the one hand, such position provides a performing of standard requirements to physical education at school, on the other hand – ne passive in physical training and sport work. A large number of children have a low level of interest to the motion activity. It was fixed for girls 11 years – 1.9%; for children 12 years – 2.7% of girls and 1.5% of boys; children 13 years – 4.2% of girls and 2.3 % of boys; children 14 years –3.5% of

girls and 3.7% of boys; children 15 years – 7.1% of girls and 3.5% of boys and especially vexatious that children particularly girls have no interest to the motion activity in the process of studying.

Table 2.6

Level of interest to the motion activity of teenagers, %

Level of interest	Sex	Age, *years*				
		11	12	13	14	15
High	G	18.2	19.5	18.7	14.3	9.8
	B	31.7	26.9	25.4	27.7	23.2
Higher than average	G	28.3	29.5	26.1	25.8	26.7
	B	25.5	26.9	24.2	29.7	30.7
Average	G	63.7	41.2	41.9	46.4	44.7
	B	39.9	42.0	41.8	35.1	34.3
Lower than average	G	4.7	5.2	5.6	6.1	5.9
	B	2.9	2.7	4.1	3.8	5.4
Low	G	1.9	2.7	4.2	3.5	7.1
	B	-	1.5	2.3	3.7	3.5
Lack of interest	G	1.4	1.9	3.5	3.9	5.8
	B	-	-	2.2	-	2.9

So, it is absent for 1.4% of girls 11 years; –1.9% of girls 12 years; – y 3.5% girls and 2.2% of boys 13 years; – 3.9% of girls 14 years; –5.8% of girls and 2.9% of boys 15 years. A.M. Voylokov [200] observed a similar situation. He remarked that due to the age and sex, an attitude of schoolchildren change noticeably. Positive attitude to PE lessons increases while the studying in 1-4 forms, then it declines gradually with the increase of years.

Training, sanitary and sport activity of pupils depend greatly on a creation of motives of activity. Motive – a human incentive to the activity that is related to an attempt to satisfy some needs. A number of motives determine an incentive to the activity. Precisely on the motives, it depends, what this or that action introduces in the psychological plan and what subjective content it has for a human.

Study results testified that motives to the classes of physical exercises of children of average school age are different enough (table 2.7).

The main motives of physical exercises performing and attendance of PE lessons by girls – an intention to have a nice body build (45.2% – 52.4% depending on the age). A desire to improve health state (43.2% – 51.3%), to increase a physical training (20.7% – 32.3%) are the motives on the second and third place.

The importance of such motive, as an acquisition of physical exercises technique, is minor and composes only 6.8% – 8.2%. The results of

Table 2.7

Motives of physical exercises performing of teenagers (including the attendance of PE lessons), several variants of answers were allowed, %

Motives	Sex	Age, *years*				
		11	12	13	14	15
To improve a health state	G	43.2	41.7	49.8	50.5	51.3
	B	36.4	32.5	39.3	47.1	44.9
To have a nice body build	G	45.2	51.4	47.3	52.4	49.6
	B	26.9	27.2	39.4	38.5	47.2
To master a technique of physical exercises	G	7.3	7.9	8.2	5.7	6.8
	B	19.7	23.6	17.9	17.2	14.4
To increase a physical training	G	32.3	28.2	25.4	20.7	21.3
	B	47.4	39.5	44.6	42.7	35.1
Interest to a personality of teacher, specialist	G	34.1	33.8	24.7	18.4	19.5
	B	21.7	23.5	19.4	22.6	23.4
To gain high marks (during the lessons)	G	37.9	38.5	34.3	17.1	15.2
	B	26.4	31.5	25.2	21.8	19.6
To avoid troubles because of absences from classes	G	29.6	31.2	14.8	12.1	13.7
	B	20.7	21.3	20.5	12.4	11.5

questionnaire poll testify that the girls don't pay enough attention to the motives of intention to get good marks and avoid troubles.

The motive as in interest to a personality of teacher for girls is low-rise. It is possible to suppose that such a state is caused by two reasons. Firstly, the schoolgirls don't realize an importance of physical education for their life and work, its role in the preservation of health and health promotion. Secondly, may be some part of PE teachers doesn't have enough special training and treat with an organization of physical education at school in a bad faith.

Almost the same situation was observed during the analysis of answers of boys. The main motives of physical exercises performing and attendance of PE lessons by boys – a desire to increase a physical training (35.1% – 47.4%); a desire to improve a health state (32.5% – 44.9%) and an intention to have a nice body build (26.9% – 47.2%).

If to consider an aged dynamics of motives of physical exercises performing by teenagers, a pretty peculiar scene is observed. Motives – a desire to improve a physical training; an interest to a personality of teacher, specialist (for girls); gaining of high marks; a desire to master a technique of physical exercises has a tendency to the decline with the increase of years.

It is obvious that with the increase of years schoolchildren pay less

attention to their physical training and have already other more important values. Intentions to improve a health state and have a nice body build from 11 till 15 years of children increase permanently. It is possible to state that these motives take leading places in a conscious of teenagers.

Steady interest to a physical education causes an intention to the systematic classes of physical exercises. If there are no or almost no sports clubs then as a rule schoolchildren perform physical exercises on their own. If to analyze the questionnaire data, then it is possible to make conclusions about a low per cent of children who do physical education and sports systematically (table 2.8.).

Table 2.8

Number of classes of physical exercises of teenagers during a week, %

Number of classes	Sex	Age, *years*				
		11	12	13	14	15
3–4 times	G	22.3	19.6	19.3	15.7	14.6
	B	29.7	31.2	27.5	20.6	17.3
1–2 times	G	77.7	80.4	80.7	84.3	85.4
	B	70.3	68.8	72.5	79.4	82.7

The analysis of systematic character of physical exercises by teenagers during a week showed that with the increase of age, there is an observed tendency to the decline of a number of classes. Only 29.7% of boys and 22.3% of girls at the age of 11 років – do physical exercises 3–4 times a week; children at the age of 12 years do physical exercises 3-4 times a week accordingly – 31.2% of boys and 19.6% of girls; children at the age of 13 years do physical exercises 3-4 times a week accordingly – 27.5% of boys and 19.30 % of girls; children at the age of 14 years do physical exercises 3-4 times a week accordingly – 20.6% of boys and 15.7% of girls; children at the age of 15 years do physical exercises 3-4 times a week accordingly – 17.3% of boys and 14.6% of girls. As it is noticeable almost 80% of children at the average school age do physical exercises 1-2 times a week that is they limit their motion activity by compulsory PE lessons.

Considering the biological regularities of influence of physical exercises on a physical state and health of teenagers, two-day classes of physical exercises a week are not obviously enough.

An attitude of teenagers to the forms of physical activity has an influence on a state of motion activity of schoolchildren at the average school age. Such attitude can increase or decline an effectiveness of educational process. Related to this, we studied an attitude of teenagers to the forms of physical activity at schools.

Analysis of results, presented in the table 2.9, show that teenagers prefer such forms of motion activity: sports clubs at school – 56.2%-67.1 % of girls, 57.1%-73.5% of boys; physical activity in the rest camps – 48.5%-68.3% of girls, 51.4%-73.7% of boys; sports clubs in the Sports School for Children and Youth – 38.6%-55.2% of girls, 42.7%-63.1% of boys. The fact frightens that children don't pay proper attention on such forms of motion activity as the PE lessons – 26.8%-39.2% of girls, 30.5%-47.5% of boys. Moreover, a popularity of these forms decline during the process of studying.

Table 2.9

Attitude of teenagers to the forms of physical activity, several variants of answers were allowed, %

Forms of motion activity	Sex	Age, *years*				
		11	12	13	14	15
PE lessons	G	39.2	41.7	35.4	31.2	26.8
	B	47.5	32.8	43.9	38.6	30.5
Physical activity in the regime of school day	G	6.8	7.1	5.4	6.3	4.1
	B	19.4	17.8	20.5	12.2	11.4
Sports clubs at school	G	56.2	54.9	60.3	62,8	67.1
	B	62.5	57.1	61.8	67.4	73.5
Large PE and sports events	G	21.6	28.9	14.3	19.5	22.4
	B	19.4	23.9	20.7	22.8	19.3
Sports clubs in the Sports School for Children and Youth	G	49.7	53.8	55.2	45.1	38.6
	B	56.9	42.7	63.1	58.5	45.7
Separate classes of physical exercises	G	12.7	10.5	18.1	17.4	15.3
	B	17.9	15.3	21.8	22.3	19.4
Physical activity in the rest camps	G	68.3	52.5	67.9	48.5	51.3
	B	69.1	73.7	51.4	58.9	62.7
Physical activity in public organizations	G	4.7	11.5	9.3	7.2	12.4
	B	12.7	18.2	19.8	13.1	22.3

Interest, motive of teenagers to the physical education and sport is greatly reasoned by some social factors. Mainly the majority of children don't do physical exercises because of a lack of free time (table 2.10). This index for boys is 54.4%-69.7%, for girls – 53.2%-62.9%. Some part of teenagers don't do physical exercises because of it is boring (16.0 %-20.8 %), there are more interesting classes (17.4%-33.9%), a health doesn't allow (12.9%-39.4%).

Table 2.10

Factors that interfere to do physical exercises, several variants of answers were allowed, %

Numbers of factors	Sex	Age, *years*				
		11	12	13	14	15
Boring	G	16.0	20.0	21.1	18.8	19.5
	B	20.8	14.3	17.4	18.3	19.1
Lack of free time	G	55.4	53.2	54.6	62.9	59.3
	B	61.9	55.4	69.7	68.4	57.2
There are more interesting classes	G	22.1	23.4	32.2	25.7	33.9
	B	31.6	27.4	17.4	26.7	29.2
Don't see a benefit of classes	G	13.0	13.3	12.8	11.5	10.6
	B	5.9	14.3	13.7	12.4	13.2
Because of lack of sports training	G	13.0	11.5	13.3	12.7	10.2
	B	12.7	5.2	13.8	11.5	9.4
A health state doesn't allow	G	28.4	36.2	32.5	39.4	36.5
	B	18.7	12.9	24.1	19.9	22.3
Lack of clubs of those kinds of sport which I would like to do	G	22.3	19.9	21.4	25.9	27.4
	B	18.4	11.7	17.1	8.5	12.7
Be exhausted after the classes	G	12.8	17.4	12.3	20.1	17.6
	B	-	5.7	-	9.2	7.4

Considering such results of questionnaire poll, the kinds of activity of pupils in spare time were determined (table 2.11). Study results testify that 39.4 % – 56.2 % of girls and 23.7 % – 47.3 % of boys have a rest at home in the bosom of the family.

Table 2.11

Spending free time by children, several variants of answers were allowed, %

Number of factors	Sex	Age, *years*				
		11	12	13	14	15
Participate in social work	G	9.4	12.5	19.1	15.7	13.6
	B	14.8	10.3	12.8	9.5	11.4
Read belles-lettres	G	26.8	31.5	30.7	24.9	22.4
	B	25.7	28.5	20.8	17.3	12.9
Have a rest at home in the bosom of the family	G	56.2	49.6	51.3	45.7	39.4
	B	43.1	47.3	38.5	31.9	23.7
Relax with friends	G	59.8	61.3	72.5	63.2	58.9
	B	70.5	54.8	69.6	71.3	72.5
Listen to music	G	33.1	31.6	27.9	22.4	20.6
	B	32.6	28.4	27.7	18.5	20.3

Table 2.11 continuation

Number of factors	Sex	Age, *years*				
		11	12	13	14	15
Play musical instruments	G	21.9	17.8	11.6	12.4	10.5
	B	18.3	12.7	10.5	7.3	9.1
Participate in amateur talent groups	G	15.9	14.6	16.2	13.4	11.7
	B	12.3	13.7	10.5	7.5	9.4
Interested in art (painting, sculpture)	G	17.8	15.5	16.8	10.3	8.7
	B	11.4	9.5	12.3	7.8	6.1
Do gardening	G	3.8	4.5	6.2	8.7	9.2
	B	7.2	2.5	9.7	11.5	8.4
Do sports, tourism	G	24.6	20.8	24.3	20.5	17.8
	B	29.5	22.7	23.9	18.1	20.5
Visit discos	G	43.7	37.9	38.7	29.5	31.3
	B	42.5	17.9	38.3	14.8	20.5
Interested in the technology, do collecting	G	9.2	10.1	7.9	8.3	4.6
	B	14.9	8.3	11.5	10.2	5.4
Watch TV, listen to the radio	G	75.3	69.2	66.8	78.5	72.4
	B	81.9	73.6	68.1	80.6	73.4
Read books, newspapers, magazines	G	25.6	28.2	20.4	21.7	18.7
	B	26.4	25.2	14.5	17.8	12.3
Visit cafés, bars, restaurants	G	25.6	17.5	26.9	30.7	34.1
	B	27.3	12.8	25.6	19.0	21.4
Visit friends, relatives	G	60.6	61.8	48.3	63.7	45.8
	B	58.2	47.3	39.1	23.5	27.1
Work, socialize, play computer games	G	92.7	88.5	78.4	89.3	85.5
	B	89.4	91.5	78.9	87.3	89.7

On average 58.9%-72.5% of girls and 54.8%-72.5 % of boys relax with friends; 78.4%-92.7% of girls and 78.9%-89.7% of boys work, socialize, play computer games.

Considering the results of questionnaire poll, it is possible to suppose that a problem is not because of lack of free time, but because of its correct organization. Free time of pupil is that part of its general time budget that is left after the performing of studying duties, satisfaction of natural-physiological needs and daily affairs. Due to the answers of responders, they fill their free time with an activity that has no any common with an active leisure and motion activity. That's why it is important to offer pupils the different types and kinds of leisure that include games, tourism, trips that is a physical loading.

To spend active leisure, some sports equipment is necessary. Results of questionnaire poll testified that a lot of families own sports equipment (table 2.12).

Table 2.12

Availability of sports equipment of pupils' families, several variants of answers were allowed, %

List of available sports equipment	Sex	Age, *years*				
		11	12	13	14	15
Skis, skates	G	47.5	51.8	42.3	47.1	40.5
	B	43.1	52.7	46.4	49.2	51.6
Balls (football, volleyball, basketball and others)	G	39.1	48.6	42.4	48.3	40.7
	B	51.6	49.5	53.8	62.5	50.1
Dumbbells, barbell, weights	G	32.9	28.7	29.6	35.8	30.2
	B	38.3	41.2	35.4	37.3	39.8
Training device (exercise bicycle, running track, etc.)	G	12.4	15.1	9.7	19.4	11.5
	B	17.8	10.6	12.5	17.9	15.3
Bicycle	G	42.8	49.1	43.7	50.5	51.4
	B	52.4	43.6	49.5	47.1	50.2
Plate frisbee	G	-	1.3	-	-	2.4
	B	-	-	2.5	1.8	1.4
Equipment for tennis, badminton	G	50.9	53.6	49.1	58.7	52.3
	B	48.4	49.8	51.5	46.7	51.6
Set for darts	G	-	4.5	2.7	8.1	3.7
	B	4.2	2.6	1.9	7.4	6.3
Tourism equipment	G	28.5	22.4	29.8	14.5	30.7
	B	30.2	19.8	24.3	19.9	22.4
Sports equipment is absent	G	4.8	2.5	6.3	2.1	3.9
	B	2.8	1.4	5.2	4.9	3.7

Particularly, children own skis, skates (40.5%-52.7%), balls (football, volleyball, basketball) (39.1%-62.5%), bicycle (42.8%-52.4%), equipment for tennis, badminton (48.4%-53.6%). Some part of families keeps tourism equipment, set for darts, dumbbells at home. Very small percentage of families (1.4%-6.3%) don't have any sports equipment. Availability of sports equipment of families creates a good background for encouraging the children for systematic separate classes of physical exercises and so for the increasing of motion activity.

CHAPTER 3
SCIENTIFIC METHODOLOGICAL BASES OF DEVELOPMENT OF MOTION ACTIVITY OF TEENAGERS IN THE EXTRACURRICULAR ACTIVITY

3.1 General characteristics of development of motion activity of teenagers in the general educational establishments

Study results (chapter 2) testified that a level of physical training and a health state of pupils depends on a lifestyle that characterizes conditions and features of human daily lives. Lifestyle includes different spheres: work, studies, everyday life, social life, culture, human behavior and spiritual values. One of the most important indexes of lifestyle is a capacity of motion activity that combines various movements that are being performed in the daily life, labor and studying activity. Due to this fact, there is a concept «active way of life» in the scientific and methodical literature [153] and it gives a chance:

- cope with physiological needs of everyday life without additional tiredness;
- relax actively, getting maximum pleasure;
- overcome hard physical efforts in the extreme situations and extra stresses that a human faces an a lifetime;
- eliminate some dysfunctions in the human organism;
- control weight, if an excess weight threatens, and slow a process of ageing of organism;
- restore energy rapidly.

Motion activity is being realized not from a perspective of the achievement of a clearly determined purpose, but from a perspective of exact activity that create a chance for a demonstration of its physical, mental and creative possibilities. The results of such activity show a health promotion, resistance and preventive maintenance of diseases, a correction body build and weight [35; 92; 195; 207].

In the process of human vital activity, a motion activity is determined by a system of values due to such components: social-cultural (personal values that have an important role for a society), individual-psychological (values that are received as a result of motion activity, are a reference point of healthy lifestyle and a good health).

Effectiveness of motion activity is defined by an influence on such fields of human vital activity:

– cognitive sphere – through the awareness of role and importance for harmonic human development of satisfaction of biological need in movements;

– emotional sphere – through the creation of positive attitude to a physical activity and its importance in the system of human values;

– physical sphere (psychomotor) – through a creation of motion skills and abilities, development of physical and psychophysical qualities, health preservation and promotion.

Realizing a physical activity, a human satisfies a number of vital needs [153], precisely:

– rest and relax that can be satisfied, changing a variety of activity;

– psychophysical activity, having satisfied that, a human compensates a natural hypodynamia;

– changes of ways or a vital activity environment that is very important in the urban society;

– emotional satisfaction, amenities that produce positive emotions;

– decline of level of self control over the actions in the process of relaxation, recreation;

– braking of aggression that is possible in the process of physical activity that promotes a creation of positive motivation and gives a chance to gain negative emotions of human;

– satisfaction of ambitions (for example, a need of prestige, recognition power, etc.) that is a motivating force in its natural form;

– cognition (for example, a need of getting, conservation and information transfer);

– self-cultivation and self-realization that cannot be always satisfied in the professional, educational, public and other activity and don't create chances of full value for harmonic development of personality

– satisfaction of ethical needs is being achieved through a direct contact with a nature (beauty of nature), cultural environment and also in the process of self-cultivation when a person improves own movements, posture, body build;

– social (a need of feeling the membership of some group, social contacts).

From the medical-biological point, a physical activity is a main stimulant practically of all functions of organism, a guarantee of optimal physical improvement of human. Physical loading promotes a development of locomotor apparatus, central nervous system and internal organs, strengthen a health state.

Considering the scientific works in the field of medical-biological bases of physical education, psychology, pedagogy, theory and methods of physical education, a model of creation the motion activity of teenagers was developed (figure 3.1).

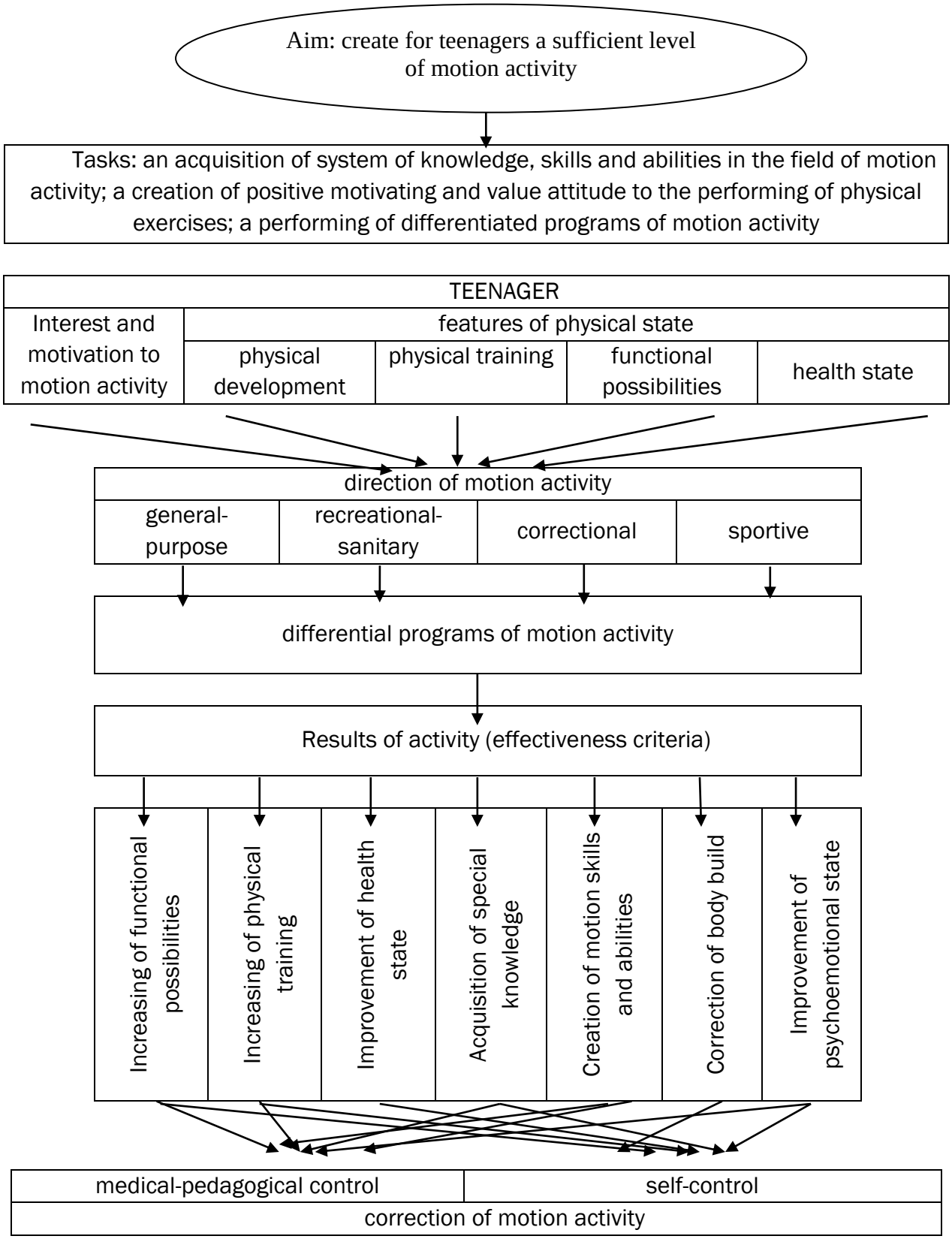


Figure 3.1. Model of creation of motion activity of teenagers

Aim of motion activity – to form a sufficient level of motion activity for teenagers and it provides an optimal functional activity. Exact sufficient motion regime provides a necessary level of the reaction of child organism on the factors of external and internal environment.

The realization of certain aim was done with the help of solution the main and additional tasks: an acquisition of system of knowledge, skills and abilities in the field of motion activity; a creation of positive motivating and value attitude to the performing of physical exercises; a performing of differentiated programs of motion activity, depending on the features of organism of teenagers.

Additional tasks: a creation of interest to the systematic classes of physical exercises; a creation of persuasions in the necessity of motion activity; a comprehensibility of motion activity methods; a creation of skills and abilities of motion activity; a creation of self-rating and self-control skills.

It is possible to overcome the negative consequence that is reasoned by a decline of motion activity, just with a help f rational system (optimal) motion regime. Every person individually needs some diapason of motion activity level for a normal development and functioning of organism, health preservation. Minimum level allows keeping a functional state of human organism; maximum limits lead to exhaustion, rapid decline of working capacity. Optimal motion regime is interpreted as regulated due to the intensity a physical loading that fully satisfy a biological need in the movements, correspond functional possibilities of organism, take into account a specialty and particularity of professional activity and as a result, promotes an education of healthy lifestyle and a health promotion [160].

For the development of optimal parameters of motion activity, a complete information about the interest and motivation of teenagers to the motion activity, peculiarities of physical state (physical development, physical training, functional possibilities, health state) are necessary. One may determine the effective kinds of motion activity; develop the parameters of rating of physical loading, having rested upon the fixed indexes.

The various thrust of motion activity (general developmental, recreational and sanitary, correctional and sportive) was developed on the basis of the study results of motivational-value factors and morphofunctional features of teenagers (chapter 2).

The general developmental thrust of motion activity expected a system of knowledge of physical exercises that is directed on a complex approach which combined different loads on agility, flexibility, strength, speed, endurance. Due

to the fact that a content of physical education in the general educational establishments is regulated by State program, an experimental methodology included exercises from the section of gymnastics, track-and-field athletics, sports games, cross country training, swimming. Along with a creation of motion skills and abilities, much attention was devoted to the development of physical qualities, a level of which greatly stipulates a health state of schoolchildren. Main aim of motion activity of general developmental directivity was in the performing of school program content, development of leading and lagging physical qualities, increasing of defense forces and resistance of organism to the adverse factors of the environment. Such work organization allows eliminating a deficit of motion activity, giving an impulse to the health improvement by the preserving motivation, means of physical education, and development of physical qualities.

Motion activity of recreational and sanitary directivity expected the use of physical exercises, games, entertainment and also natural and hygienic factors for the active rest, change of occupation, renewal of own energy, improvement of psychic and physical abilities, renewal and promotion of health. Gradual increasing of functional opportunities of teenagers was occurring in the process of physical exercises performing. Special attention was paid on the state of cardiovascular and breathing system. Exercises of sanitary and therapeutic physical culture were used widely. Attention was paid on the creation of self-control and hygiene skills for teenagers. The content of classes was directed on the interest of physical exercises for pupils, creation an optimistic mood during the classes that greatly increased an effectiveness of motion activity.

Realization of recreational and sanitary motion activity promoted an expansion of world outlook of children through a creation of notion of healthy lifestyle, physical education and sports, a creation of steady motivation for the preservation and promotion of health, a creation of knowledge about healthy lifestyle and positive influence of physical exercises on the child's organism; health promotion, increasing of working capacity.

Motion activity of remedial directivity provided a preventive maintenance and correction of posture disorder of pupils. Prior condition of breeding of correct posture is a steady development of all musculature of children especially the muscles that hold a spine, considering the features of physical development, an influence of physical exercises of different biomechanical directivity on a spacious body organization. Large part of physical exercises was directed on a creation of skills of correct static and dynamic posture that

provides an optimal functioning of loco motor apparatus. To achieve this, skills to keep body correctly were formed: exercises lying on back, hip and chest, on the bench, exercises based on the balancing with load on a head.

During the development of complexes of physical exercises for prevention maintenance and a correction of posture disorder, such factors were considered:

– a selection of physical exercises was fulfilled, taking into account an age, a sex of children and heterochrony of a development of the structures of loco motor apparatus;

– a systematic character and a sequence of physical exercises performing;

– a clear dosage of physical exercises due to a physical state of teenagers;

– a creation of «muscular corset» of teenagers (development of strength);

– an increase of amplitude of movements in the joints (development of flexibility);

– a creation of memory of the correct spacious body organization.

Remedial directivity of motion activity provides a creation of hygiene skills, the methodology of using physical and psycho-hygienic sanitary-seasoned and corrective means with an optimal capacity of loads during their performing.

Motion activity of sports directivity expects a training of rated-sportsmen and is firstly provided by the activity of Sports Schools of Children and Youth. The necessary condition of this work is considering of knowledge system about availability of primary training in the sports school for any pupil, a progressiveness of evaluation of the training results effectiveness.

Prior tasks of primary sports training of teenagers are a creation of motivation to the motion activity, a creation of basis of motion training, a development of aspiration to the systematic trainings. That's why, a system of sports competitions of pupils firstly solves problems of diversified evaluation of pupil promising outlook from the point of his or her genetic, physical, technical and personal tendency to certain kind of sport. Subsequently, an intensification of sports training of teenagers occurs and as a result they have created system of knowledge, abilities, skills, some level of physical and functional training that provide the highest level of readiness to sport achievements.

Motion activity is a fundamental factor of human health promotion, a basis of effective functioning of the organism. From the social point of view, an activity performs different functions (figure 3.2).

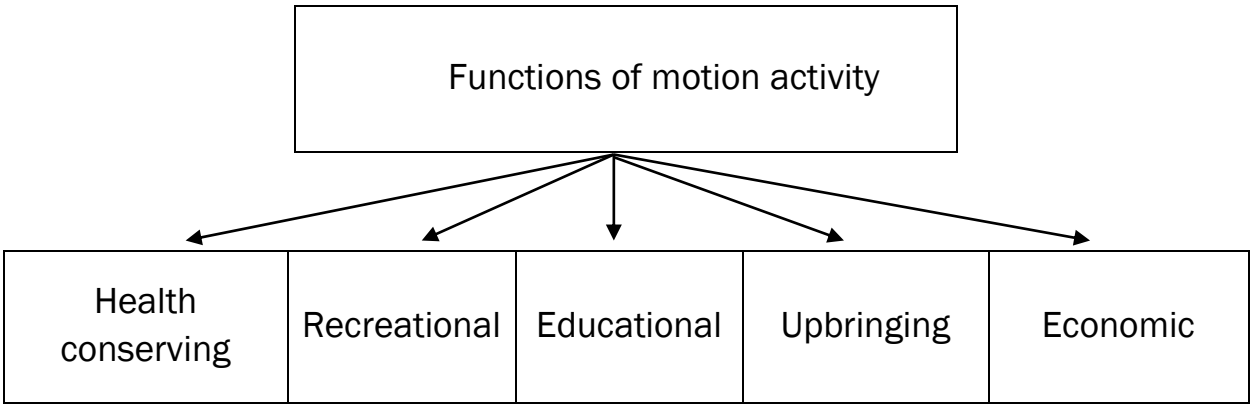


Figure 3.2. Classification of functions of motion activity of teenagers

Health conserving function expects a health preservation and promotion of pupils through the provision of optimal conditions of vital activity of the organism. Realization of this function expects an implementation of health conserving activity that is regarded as a specific form of human activity, directed on a creation of healthy lifestyle, an increasing of physical and intellectual working capacity, an adaptation to the natural factors of external surroundings.

Components of health conserving activity combine such forms and kinds of work:

– a realization of different forms of organization of teaching and educational process considering their psychological and physiological influence on pupils;

– a rational regulation of educational loading during the day, week, month and preventive maintenance of exhaustion of pupils;

– a realization of curriculums of the forming of skills for pupils to keep a healthy lifestyle;

– a keeping of optimal motion activity according to the age, sex and health state of pupils;

– an organization of events directed on a health preservation and promotion of pupils, a creation of health conserving area;

– a medical and pedagogical monitoring of health state, physical and psychic development of pupils.

Generally, a health conserving activity in the general educational establishments is being realized by the use of health conserving technologies (an amount of scientific knowledge, means that allow on the basis of functional and psychophysical parameters of human health to select an adequate training loading that allows increasing the functional possibilities of

organism, a social activity, an athletic instruction). Health conserving activity in the teaching and educational process of general educational establishments is being realized through the system of requirements.

1. Educational-methodological requirements:

– a connection of an aim, tasks, a content of classes with life and health of pupils;

– a development of motivational and value orientations, motivation to the health, lead a healthy life;

– a directivity of class on the creation of vitally necessary skills and abilities;

– an individual-personal orientation of classes of physical exercises;

– a use of system of means, forms and methods of physical loading according to the possibilities and desires of pupils;

– a harmonic combination of studying, breeding and development of pupils.

2. Organizational-methodical requirements:

– an optimal alternation of kinds of educational, recreational and leisure activity of pupils;

– a provision of optimal general and motor dense classes;

– an optimal use of frontal, group and individual forms of classes of physical exercises;

– a permanent control and correction (of objective and subjective indexes) dimension of physical loading and tiredness of pupils;

– an evaluation of the studying activity results through the comparison with the own primary indexes.

3. Social-psychological requirements:

– a considering of aged psychological and morphofunctional peculiarities of pupils;

– a development of interest and motivation of pupils to the individual and systematic performing of physical exercises;

– a creation of positive emotional climate of studying;

– a use of novelty elements, musical superwire of classes.

4. Sanitation requirements:

– a keeping of sanitation regime of physical exercises classes (airing and cleanliness of rooms, optimal lighting, sound and temperature condition);

– a correspondence of equipment, implements to the aged development of pupil, his or her satisfactory state.

The result of such activity is a creation of health conserving competence that is determined as an ability to create on one's own and perform a system of means and methods which are connected with the support, promotion and preservation of health.

Educational function expects an assimilation of special knowledge, a creation of special skills and abilities. Special knowledge expects an assimilation of facts, concepts, methods, regularities of motion activity. They become the property of personality when they enter a structure of its experience. Special sanitary and sports knowledge that pupils assimilate during the process of motion activity, can be divided into five groups:

– the knowledge of PE history, a history of origin and development of separate physical exercises, Olympic movement;

– the knowledge of psycho pedagogical and medical biological direction (peculiarities of organism development of pupils, an influence of physical exercises on the organism of pupils, a creation of motivation to the performing of physical exercises, a dosage of physical loading, a correction of tiredness and a renewal of organism, methods of self-control);

– the knowledge that promotes an optimal activity organization of pupils during the process of physical exercises performing (an organization of sports games, competition judging, preventive regulations during the performing of physical exercises of different directivity);

– the knowledge of methodology the conducting of classes of physical exercises (means, methods, methodical ways of studying, control and correction of motion activity of pupils);

– the knowledge that is necessary for individual performing of physical exercises (technique of exercises performing, optimal limits of physical loading, control and self-control).

Pupils received some special knowledge during the classes of physical exercises. Theoretical material was combined with a content of practical activity in order not to disserve a motion activity of teenagers. Separate sections of knowledge were presented like short messages early in the year. It is necessary to remark that such messages referred to those physical exercises which were performed directly. Statements from the technique of physical exercises, teaching methods were presented in the process of explanation and exposition of permissible mistakes and ways of their correction.

Creation of special knowledge occurs with the creation of motion skills and abilities, the development of physical qualities. The result of educational function is an effectiveness of knowledge that is determined by a conscious

use of them in the practical activity, a mobilization of learned statements for getting new knowledge.

Special skills and abilities are specific for a certain subject or a science field of practical skills and abilities. Motion skills and abilities of children are formed in the process of physical exercises performing. Motion skills are a capacity to perform a motion action under the condition of the attention focusing of child on each detail of motion action. Motion control that composes a holistic motion action occurs not in an automated way. The solution way of motion task is instable, the work fulfills uneconomically, under the significant grade of tiredness. Systematic repetition of physical exercise or its parts under the direct control of consciousness, with an emphasis for the search of ways of it's the most effective performing, gradually cause to a stabilization of motion operations.

Multiple performing of physical exercise leads to a development of motion skill. Motion skill is a capacity to perform an action in automatic way that allows focusing an attention on the results of movement. Meanwhile, the automatism of separate components of motion action doesn't activate a leading role of consciousness during the action performing. In the process of development of motion skills, the performing of separate elements of its structure automates, but not the control over a movement. Motion skill is characterized by a high persistence and accuracy of exercise performing, an overactive work of motion analyzer.

Motion skills should be considered as a multicomponent system of control that includes afferent, efferent, vegetative and central components of a section. The significance of these components changes due to the kind of motion activity. Permanent change of central and executive components of motion skills is observed under the influence of afferent irritant. The difference in a nature of motion answer is connected with a variation of participation of separate nerve centers in the control of movements. According to the teaching of I. P. Pavlov, a creation of motion skills is reasoned by that fact that under the performing of movements, proprioreceptors cause an irritation of certain nerve centers that also participate in the movements performing (visual, tactual, auditory) and create the necessary temporary ties. These ties strengthen and create «a dynamic stereotype» after a large amount of repetitions.

The system of formed knowledge, skills and abilities determines the erudition of pupil in the field of physical education and is a basis of individual motion activity.

Economic function is defined by an inclusion of motion activity in the social production. At the same time, such influence has an indirect nature. Particularly, a motion activity effects directly the creation of public product via a subject of industrial relations (human). Meanwhile, a system of classes of physical exercises is a developing field of economic relations that combines different, by an origin, sources of financing and material and technical provision.

From the economic point of view, a motion activity has an influence on the solution of some tasks:

– a reproduction and increasing of a quality of labor force;

– an increase of lasting the working capacity of full value and active longevity;

– an increase of amount of work places in the recreational and tourism fields of economy.

Recreational function expects a renewal of physical and spiritual forces through the changes of atmosphere and kind of activity. Kinds of recreational activity have certain ways of realization that determine a point of recreational classes. In the structure of such classes, properly recreational classes are separated and they are divided into two groups:

– a group of renewal (recreational-therapeutic, recreational-sanitary, recreational-correction classes);

– a group of development (recreational-sports, recreational-cognitive classes).

As scientists think [153], satisfying needs during the process of recreational activity, firstly a human develops harmoniously an emotional sphere of vital activity; secondly, a human satisfies various needs for supporting of functioning balance of the organism; thirdly, a human opens a new space for improvement of personality, new forms of self-realization; fourthly, a human as an active participant of recreational forms, stimulates a process of self-improvement.

Upbringing function is being realized through the creation of world outlook, morality, spirituality, patriotism, ways of responsible behavior and activity in the society, systems of ideals, needs, that is a number of personality qualities. Upbringing function is reasoned by a content of studying process and is realized due to a realization of system of upbringing methods in a common activity of teacher and pupils.

Realizing own upbringing function, a performing of physical exercises is able to solve problems of moral, aesthetic, labor and intellectual development.

In order that a motion activity perform stated functions fully, it is necessary to care about a development and a use of recreational resources at school and out of school, and optimization of the amount of free time of pupils, propaganda of popular kinds of motion activity, a training of qualified staff for the recreational-sanitary work.

Classes of physical exercises were conducted considering the main **didactic principles** (fundamental ideas, regulations that penetrate all levels and components of physical education and testify their system integrity). Principles contain a range of universal regulations, without their keeping a rational structure of studying and therapeutic classes is impossible.

Principle of scientific content obliges to organize a pedagogical process on the basis of modern scientific achievements. It specifies the main regulations of selection of the studying material according to the purpose and tasks of classes of physical exercises, discovers the causal ties of physical education. Realizing the principles of scientific content, it is necessary to follow certain rules:

– use a science as a source of modern system of notions and facts during the preparation of studying material;

– acquaint pupils with a history of physical exercises and mechanisms of their influence on a human organism;

– acquaint pupils with modern sports achievements in the different kinds of motion activity;

– develop internal ties of physical education, causal ties of different kinds and forms of motion activity;

– use means and methods of learning that have pedagogical, medical-biological and psychological rationale and correspond to the abilities of pupils;

– use an officially excepted in the field terminology in the process of classes.

Principle of consciousness and activity develops mechanisms of the provision of conditions for a perception by pupils a purpose of classes of physical exercises, a creation of optimal emotional conditions for studying, an activation of fitness-sanitary activity. The effectiveness of physical exercises performing depends not only on the amount of classes but on their quality (self-dependence, initiative of pupils, analysis of made mistakes, and correction ways of them and improvement of motion actions). Realizing the principle of consciousness and activity, it is necessary to follow some rules:

– create specific and feasible tasks of sanitary or therapeutic training;

– motivate and stimulate the fitness-sanitary activity of pupils;

– use widely game and competitive methods of activity organization for pupils;

– use a novelty of training exercise or its part;

– use different means, methods and methodic techniques of teaching;

– use demonstrative and technical means of studying, nonstandard equipment and facilities;

– use different ways of organization of pupils;

– use a musical accompaniment;

– stimulate independent classes of physical exercises;

– develop for pupils an ability to evaluate success and defeat, make conclusions correctly;

– control physical state and tiredness of pupils in the process of physical exercises performing.

Principle of systematic character and sequence is reasoned by a regularity that opens a dependence of studying effect on a level of content integrity of pedagogical process and provides cross-curriculum and inter subject composite ties. Continuity is in the basis of sequence (in the limits of novelty and complexity) tasks, means and methods of studying within one lesson and range of lessons. In the process of educational process such sequence of physical exercises training is provided when the effects of positive transform of motion skills and abilities are being used. Realizing the principle of systematic character and sequence, it is necessary to follow certain rules:

– provide the use of inter subject ties (between academic subjects, separate sections of program, separate themes);

– form a need for a systematic physical exercises performing during the week, month, year, life;

– realize the rules «from simple to complicated», «from learned to not learned» in the training-sanitary activity;

– use of a staged complexity of motion actions and extension of their composition.

Principe of accessibility expects a use of such educational and training material and it is necessary to apply optimal force in order to fulfill it. The subject of accessibility is form and content of physical exercise (coordinating complexity of exercise, complexity of motion action structure, level of psychophysical expenses that are necessary for action performing, amount of movements that are being performed successively and without any breaks). The extent of accessibility must change (rise) according to the physical training

and functional abilities of pupils that grow under the influence of classes of physical exercises. The accessibility of physical exercises is always individual that's why it is important to hold interaction of accessibility and individualization.

Principle of training individualization expects a use of multilevel educational tasks and ways of their fulfillment due to the individual features of pupils. Such activity can be performed with the help of differentiated approach (an organization and methodology of physical education of pupils who have similar characteristics) or individual approach (considering in the training and therapeutic process such characteristics that are inherent to a certain child).

Realizing the principle of individualization, it is necessary to follow some rules:

– consider individual and group psycho-pedagogical and morphofunctional peculiarities of schoolchildren;

– consider distinctions in the attitude of children to the classes of physical exercises and their results;

– provide a differentiation of educational tasks for every pupil;

– combine optimally group and individual organization forms of classes of physical exercises;

– keep requirements of personal accessibility.

Principle of demonstrativeness expects a use, for perception of physical exercise, visual, auditory, haptic, muscular sense. With the help of vision, a direct demonstrativeness (a demonstration of physical exercise by teacher or pupil) and a mediate demonstrativeness (a demonstration of record, paintings, charts, etc. that show an effective performing of motion action) are realized. For the auditory demonstrativeness, different ways of sound reproduction are used (beats, rhythmic beats, musical accompaniment, whistle) that promote a creation of sound images of rhythm, tempo of movements and duration of exercises. Motion demonstrativeness provides the creation of concept for a teenager about a point of physical exercise by a muscular sense that appears in the process of exercise performing.

Realizing the principle of demonstrativeness, it is necessary to follow some rules:

– demonstrate a physical exercise just when a pupil cannot imagine it and perform correctly due to the explanation;

– use a slow demonstration of exercise that gives a possibility for a pupil to perceive the exercise better;

– combine a demonstration of exercise with the explanation of it;

– it is possible to demonstrate the whole exercise or its parts. The amount of demonstrations must be not more than two-three times;

– use profitable zones of examining during the demonstration of the exercise;

– it is appropriate to give pupils the illustrative materials home for the individual analysis and future collective discussion.

Principle of strength of knowledge, skills and abilities develops methods for the creation and durable keeping received knowledge, skills and abilities in the memory (repetition of studying material, performing of new exercises in the combination with received ones before, activation of memory, thinking of pupils during the learning and repetition of motion actions, grouping of education means to systematize them; use of different exercises and methods, individual work for a creative use of received knowledge, skills and abilities). It is necessary to provide an enough amount of repetitions for a proper assimilation of physical exercises. At the same time, it is necessary to mark that a large amount of repetitions in the similar conditions can cause to the creation of dynamic stereotype that doesn't yield to the alteration. That's why it is necessary to provide a variability of physical exercises performing.

Scientific analysis of the problem of motion activity development of teenagers in the general educational establishments expects a determination of certain **pedagogical conditions** that will give a chance to organize this process more effectively. In the context of our study, a term «pedagogical conditions» characterizes an amount of external and internal factors that provide effective and resulting creation of motion activity of teenagers in general educational establishments. The analysis and generalization of scientific researches and own work results gave a chance to determine the main pedagogical conditions of motion activity development of teenagers in the general educational establishments (figure 3.3).

Creation of educational atmosphere, favorable for the creation of motion activity of a child is considered by scientists as a system of influence and conditions of personality development and also possibilities for the development of them that are in the social and spatial-objective surrounding [206]. In the educational surrounding, such subjects are marked out: a separate pupil, a collective of pupils (team, group, class, classes, the whole contingent of pupils in the educational establishment) a coach, a teacher, a pedagogical collective, parents, educational foundation in general. That's why

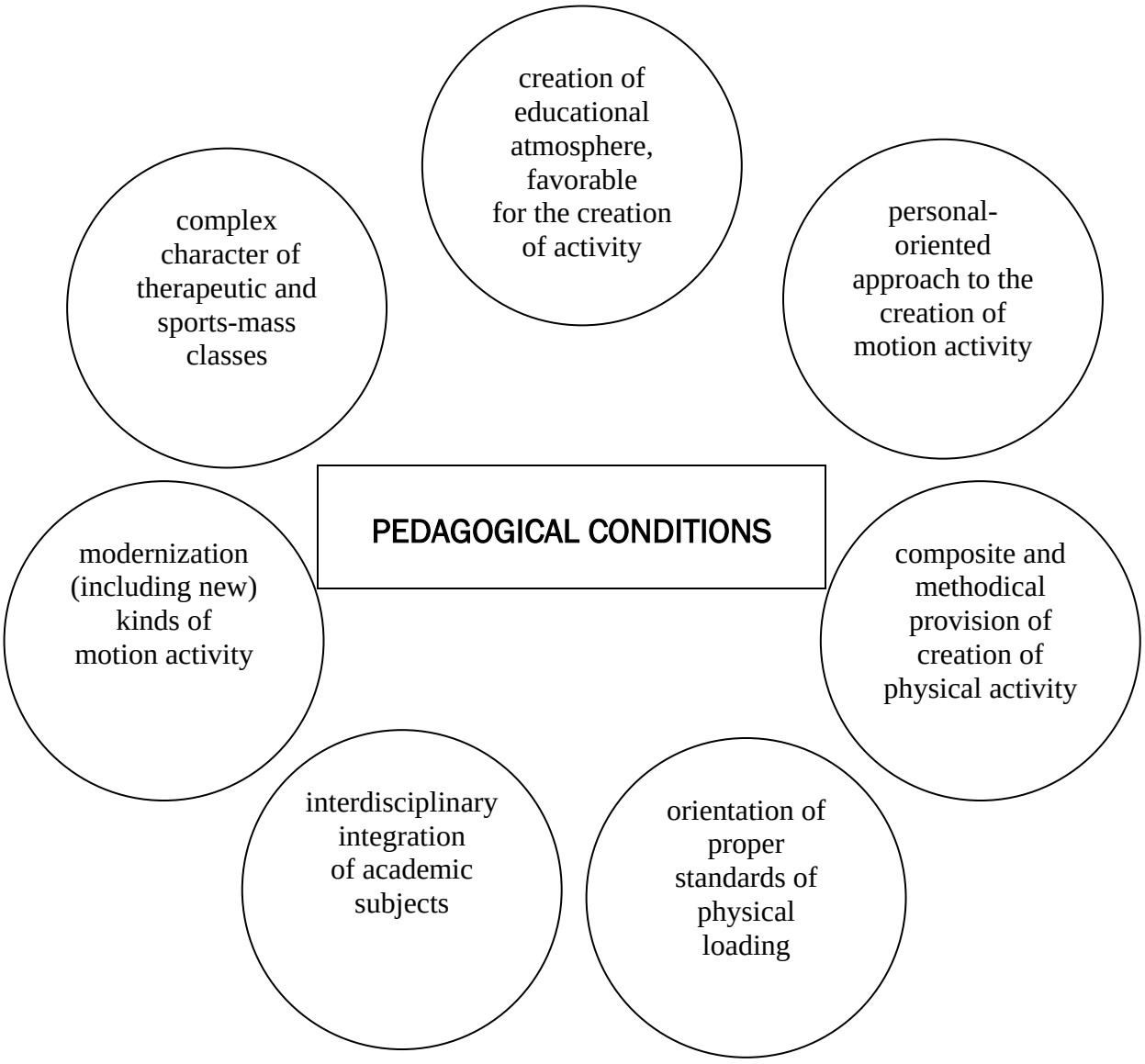


Figure 3.3. Pedagogical conditions of development of motion activity of teenagers in general educational establishments

an educational surrounding is comprehended as a system of influence and conditions of personality development and also possibilities for its development that are consisted in the social and spatial-objective surrounding.

Survey technology of state of educational surrounding allows on the basis of statistic analysis of social-pedagogical information to reveal main regularities and tendencies in the development of system and realize a prognostication of its future states by the different aspects and also possible social consequences of system of social relations that was formed in it in some

way, the creation of vital reference points and values of individual [76].

Realization of survey is being fulfilled by the keeping some factors:

– information objectivity (use of objective formalized data that are received within the information exchange of subjects of educational surroundings);

– comparability of data of system learning (analysis of environment functioning is being realized not only by a ascertaining of its state but the learning of changes that occur, comparison of received data with the initial results);

– composite nature of evaluation the factors of influence on the educational surroundings;

– predictability of received results (prognostication of future educational surroundings, possible changes and tendencies of development);

– objective mission of received data (obtaining the information is being realized in pursuance of an activity purpose).

Considering the mentioned factors allows obtaining information that characterizes the interaction of all members of educational process and on its basis model a state of educational surroundings in the aspect of formed social standards.

Self-realization of pupil increases if to keep some rules in the educational surroundings:

– develop qualities of objective analysis, critical thinking and independent utterance;

– develop the individuality of each pupil, his or her self-dependence and personal qualities;

– create knowledge and skills of basic subjects and in those fields that they are interested in;

– promote the mutually coherence of external needs and internal motives of self-realization of a pupil.

In the physical education it is important to create a favorable learning and play surrounding [74]. The organization of learning and play surrounding opens significant opportunities for the development of emotional-strong-willed qualities of children. The model of learning and play surrounding expects three mutually reinforcing and mutually reasoned units: theoretical-methodological (determine an aim, object theoretical regulations and components of surrounding); psycho-pedagogical (represent psycho-pedagogical principles of creation the learning and play surrounding, content of teacher's activity of surrounding organization and forms of its functioning in the primary studying)

and technological (determine a technology of surrounding organization within the lesson by a formulation of tasks with the organization of learning and play surrounding in the conditions of learning and play surrounding, realization of survey of development process of emotional and willed qualities).

Personal-oriented approach expects that a pupil is in the centre of studying and education that's why a selection of tasks, means and methods of educational activity is reasoned by a development of personality. In the basis of this approach is a purposeful creation of positive attitude of teenagers to the classes of physical exercises, comprehensive promotion of abilities of each pupil, detection and activation of creative qualities of pupils, orientation on the self-breeding and self-development.

Realization of personal-oriented approach to the creation of motion activity of teenagers was based on such object regulations:

– priority of individuality, inherent worth of a child as a subject of educational-upbringing and sports-mass activity;

– development of a pupil as a harmoniously developed personality;

– creation of positive motivational-valuable attitude to a motion activity;

– use of different forms and methods of organization of sports-mass and therapeutic activity of oriented on a certain pupil;

– creation of initiative and self-dependence in the process of physical exercises performing.

Providing of complex character of therapeutic and *sports-mass classes* is reasoned by a content of school curriculum and specific influence of physical exercises on the organism of pupils. It is necessary to combine rationally means of different directivity for a proper therapeutic effect. It should determine the correlation of training means within one class and more durable time periods. As the scientists think [54] a scholastic use of different means not only promotes an increasing of physical working capacity but it can have a negative influence on the health. In this case, an organism accepts a loading as a random factor and doesn't respond to its processes of adaptation. Only after a reusable systematic repetition of physical loading of certain direction, morphofunctional processes start to occur intensively in the organism. Henceforth when the organism starts to adapt to a permanent loading, a development of systems and functions of organism get slower.

In the modern conditions, different variants of therapeutic training are used. At the same time, to the thought of L. Y. Ivaschenko, they can be divided into three main groups. The first group expects a use of means mostly of cyclic nature that are carried out by the uninterrupted method during 10-30 minutes

with power 60-70% MSc. Dependant on the interests, seasons, technical equipment, every participant selects a certain kind of physical activity and performs it three times a week. Physical loading and conditions of exercise performing change with an increasing of physical state. The second group expects a use of exercises of strength and rapid-strength nature. A dimension of physical loading reaches 80-85% from maximum dimensions. The amount of exercises doesn't exceed 5-10 repetitions, and a dosage – 3-5 sets. In the third variant, a complex approach is used; it expects a combination of various loadings: endurance, a speed, strength, agility, flexibility. From the point of sanitary training, a motion activity of teenagers must have a complex character.

Substantial and methodical provision of development of motion activity expects a creation of special, psycho-pedagogical and medical-biological knowledge, a creation the system of skills and abilities, a survey and a control of results of educational activity. The content of study is a certain pedagogical model that is reflected in the curriculum and manuals. PE curriculum is a basis of state standard of physical education in the system of education that is developed on a basis of State standards. It includes a learning of gymnastics, track and field, sports games, mobile games, cross-country, ski training, swimming, theoretical statements about an essence and important of physical culture and sport.

Basic program of physical education is complemented by regional and school components (variable component) of content of general secondary education. Study results of I. V. Bakiko testified that a correlation of basic and variable parts due to the time in the younger school age – 70 x 30%; in the middle – 60 x 40%; in the older – 50 x 50%. Regional component of the program reflects a national, natural-geographical, sociocultural singularity of the region, its traditions and other statements that are presented insufficiently in the state component of education content.

School component of physical education is determined by the educational establishment considering its opportunities and specifics of educational activity and takes into account the interests of pupils, natural conditions of their residence, health state, physical development, physical training, resource base of school, regional peculiarities. The teacher defines a content of school component of physical education and a headmaster of educational establishment agrees it. Therapeutic physical exercises and nontraditional kinds of sport are in the basis of school part of program. National games, exercises are preferred and they have an applied significance and they are

hold outside; means that will promote an intensive development of physical qualities and also physical exercises and kinds of sport that are learnt deeply in some schools are proffered.

It is necessary to divide a program material into separate groups according to the themes and classes in order to determine a content of training classes. The content of physical education, except PE lessons, is realized in the extracurricular and extramural fitness-therapeutic work, attracting of pupils to the individual activity with a purpose to create skills and abilities of motion activity.

According to the conditions of substantial and methodical provision of process of motion activity creation, there is a burning need to create new manuals, brochures, methodic recommendations about the basics of motion activity development. The elaboration and using the methods of diagnostics of physical and functioning state of pupils' organism gain an important meaning.

Interdisciplinary integration of academic subjects was performed with a purpose to provide a unity and inter-accordance of historic, psycho-pedagogical, medical-biological and special knowledge. As T. Kozhenovska, A. Lisnevska [87] mark, interdisciplinary ties not only allow establishing peculiar «bridges» between academic subjects, but on the basis of content commonality of these disciplines, constructing a whole system of learning that is an important condition and result of complex approach that allows extracting the main elements of education content and interconnections between academic subjects.

In the scientific works, a conclusion is reasoned that the interdisciplinary ties is one of the most important psycho-pedagogical conditions of increasing of the scientific character and accessibility of education, its relation to the surrounding, activation of preparatory activities and improvement of process of creation the knowledge, skills and abilities.

Realization of interdisciplinary strengthens an interaction of all didactic principles and methods of studying. In turn, T. Shyhaluhov distinguishes kinds of organizational-methodical ties that can be divided into groups: by ways of learning the ties in different kinds of knowledge (reproductive, search, creative); by the width of realization (intercourse, internally cycle, intercycle); by the time of realization (sequential, attendant, perspective); by the way of interconnection of subjects (unilateral, duplex, multilateral); by the permanence of realization (episodic, systematic); by the level of organization of educational process (thematic, etc.) [10].

The value of use the interdisciplinary ties in physical education are that

they are a good basis for a unification of actions of all school teachers for the benefit of pupils' health improvement. The point at issue is that about extracurricular work and PE lessons and lessons of other subjects that provided better understanding of causal-sequential relations to the influence of different physical exe4cises on a human organism.

In the basis of methods of interdisciplinary ties realization as B. M. Shyian considers [175] is a motion reproduction of educational material. Differential performing of motion methods according to the themes of tasks of mathematical or language material and also a change of activities of pupils gives a chance to achieve better cognitive activity. During the lessons of maths, learned numbers are remembered better if to «write» them with the help of joints of shoulder girdle. It gives a chance for kids and teachers discover newly for themselves a motion apparatus, regularities of movements control, and ways of physical training improvement. During the language lessons it is rational to reflect learned letters in the form of improvised movements.

Modernization (including new) kinds of motion activity expects the use of motion activity increasing new kinds of physical loading (aerobics, step-slide aerobics, rope-skipping, etc.).

Aerobics expects the performing of physical exercises complexes for a various development of human. The performing of aerobic exercises is provided mostly for the account of increasing the oxygen consumption. Consequently, there is a favorable influence on the work of cardiovascular and breathing systems of organism. At the same time, there is no need to except aerobics as a class of physical exercises only in an aerobic regime. Separate forms of training (stretch, pump and tone) don't use an aerobic regime of training. Today a term «aerobics» includes more than 200 titles of different ways of classes.

Wellness aerobics is the most popular and it is directed on the correction of body build, increasing of body defenses, stress coping. Wellness aerobics include such kinds: base aerobics, dance aerobics, aerodance, step-aerobics, slide-aerobics, fitball aerobics, condition aerobics, box aerobics (kick-aerobics), aqua-aerobics, aquastep, velo aerobics.

Step-aerobics is a system of jumps on a small platform directed on a development of strength, coordination, rapid-strength qualities. Funky aerobics uses a system of movements having borrowed from popular dances and reflects a stylistic character of movements and music.

Physical exercises of fitball-aerobics (aerobics on balls) use an elastic

strength of ball. Slide-aerobics is provided by a performing of exercise complexes on ribbed mats wearing special socks. Aqua-aerobics expects a performing of physical exercises in water.

The other kinds of aerobics and fitness are used for the increasing of motion activity. Terarobicsis – therapeutic training that includes dancing exercises, strength exercises and stretching. Aeroboxing, Tae-Bo – a variety of aerobics classes with the elements of box and eastern martial arts. Physical exercises of spinning (spinbike), cycling aerobics expect a performing of dynamic loading on special bikes. Rope Skipping – a new kind of motion activity that combines a indication of jumps, acrobatic and dance elements with one or two skipping ropes, they are performed individually or in groups. Shaping – a program of classes when gymnastic and dance movements are used and it expects an exact regimentation of physical exercises performing with an accent on a maximum amplitude of movements.

Performing of new, unusual physical exercises increases an activity of teenagers, their motivation to the therapeutic activity, and self-dependence of classes.

Orientation on proper standards of physical loading. Motion activity is compulsory and defining factor that reasons the activities of organism in the process of individual aged development within the optimal dimensions. «Standard» is a scientifically reasonable dimension of motion activity that is determined mostly by the optimal amount of movements. Term «optimal» means «the best», «the most loyal» from possible variants of solving some tasks according to the conditions that occurred. Need of motion activity of pupils fluctuates during the year (it declines in autumn and winter periods, it increases in spring and summer). Seasonal fluctuation of physical activity depends on a region of residence (duration of light day, intensity of ultraviolet radiation, air temperature, etc.).

Readiness of organism to the performing of different physical loading is determined by the level of development of central nervous system, locomotor apparatus and those systems that make a delivery of oxygen from atmosphere air to the working muscles (lungs, heart, blood vessels) [54; 160]. Development of these systems in the age of adolescence occurs irregularly. That's why it is necessary to rely on functional readiness of organism to determine an optimal dose of motion activity. So, an optimal motion activity is changeable and strictly individual dimension.

In the scientific and methodical literature a term «boundary admissible limits» is used widely and it helps to determine maximum physical loading,

admissible in the limits of therapeutic developing training. Hygienic standard of motion activity is between top limit (boundary admissible dimension) and bottom (minimally necessary dimension). Recommended daily standard of motion activity for teenagers composes 20-25 thousand of locomotion, with general durance 3.6-4.8 hours.

Pedagogical conditions allow consider motion activity at school as activities that have a significant therapeutic, recreational, sportive and educational potential and it is performed for the solving of tasks of physical education. Development of motion activity of teenagers was planned considering the following regulations:

– creation of interest and steady motivation to the classes of physical exercises for teenagers;
– creation of positive educational-upbringing surrounding;
– use the complex of means, methods and forms of physical education;
– option of certain program of classes of physical exercises considering psychophysical state of teenagers;
– provision of permanent medical-pedagogical control and self-control;
– creation of steady knowledge about a human organism, basics of healthy lifestyle, a content and a dosage of physical loading;
– intake of parents to a participation in common sports-mass and recreational measures.

Methods of development of motion activity for teenagers were divided into three groups: an organization and realization of educational-cognitive activities, an incentive and motivation of academic activity, a control and self-control over the effectiveness of academic activity. The organization and realization of educational-cognitive activities included the methods of word (conversation, explanation, command, narration, and instruction), the methods of demonstrativeness (demonstration of movements, use of illustrations), the practice methods (teaching of motion actions, improvement and fixing of motion actions, training methods). Methods of incitation and motivation of educational-cognitive activities are directed on a creation of positive motives to the classes of physical exercises, incitation of cognitive activity. Methods of control and self-control are ways to determine effectiveness of classes of physical exercises.

Physical exercises, healing forces and hygienic factors belong to the means of motion activity development of teenagers. Physical exercises – a main and specific mean of physical education, specially organized kind of motion activities and with a help of it the tasks of physical education are being

solved. Due to the physiological influence, physical exercises are characterized by a transition of organism on the advanced level of functional activity in comparison with a state of peace. The diapason of these changes depends on a directivity of exercise and peculiarities of teen organism [195]. Physical exercises include different muscular groups and systems of organism to an intense activity. The cardiac activity intensifies, the rush of blood and oxygen to the brain cord rise, metabolic processes get better. Strength, endurance of muscles increases, their ability develops to strain and ease off, high level of coordination of muscle efforts achieves during the process of classes [35]. So, with the help of physical exercises, a positive biological influence on a human organism happens, its morphofunctional state and health state change.

Scientific researches [160] testify that a physical loading is a certain measure of physical exercise influence on a human organism and also a grade of overcoming the subjective and objective difficulties. The action of the loading is an organism reaction on the performed work that causes the adaptive changes in an organism. It was specified that light loadings excites an organism, average – strengthen an achieved level of its functioning, heavy – increase functional possibilities of organism, excessive – oppress them. That's why due to the dimension, physical loadings can be divided into reactivating, fixed developing and those that oppress a development. Heavy (developing) and average (fixed) loadings are the most important for physical education of teenagers and the duty of these loadings is to provide a therapeutic directivity of classes and control the organism development.

Physical loadings are characterized by a dimension and intensity. Dimension of loading is determined by an amount of performed exercises, weight of loads, length of finished distance, etc. Intensity of loading is characterized by the time of performing the certain work. Mentioned characteristics are external demonstrations of loading. They are determined during the training for the performing of physical exercises. That's why a dosage of loading expected a change of its dimension and intensity.

During the performing of physical exercises, different methods of dosage of strength physical loadings were used, exactly:

- decline or increase of exercises repetitions;
- increase of an amplitude of physical exercises performing;
- change of conditions of physical exercises performing;
- increase or decline of speed of physical exercises performing;
- duration of physical exercises performing;
- decline or increase of duration of breaks and rest;
- more complex of physical exercises through its combination with the

other exercises.

Thus, being based on the results of analysis of scientific sources, own experimental researches, work practice of general educational establishments and considering the positions of systemic approach as a methodological base of the study, a model of creation the motion activity of teenagers was developed and a value-motivate directivity to different, by the structure of performing and level, loadings of physical exercises is in the basis of this model. During the development of the model, all components of educational process were taken into account by the keeping of a certain purpose, tasks, functions, principles, methods and means of activities.

3.2 Realization of motion activity of teenagers in the extracurricular forms of physical education

According to the program-standard documents, physical culture as a component of general culture since physical education and mass sport are its demonstration, is an important factor of healthy lifestyle, disease prevention, organization of multiple leisure, creation of humanistic values and creation of conditions for broad balanced human development. The purpose of physical culture development is a creation of conditions for a provision of optimal motion activity of each person during the whole life, achievement of sufficient level of physical and functional training, supporting social, biological and psychological well-being, improvement of health state, disease prevention and physical rehabilitation.

State policy in the area of physical education and sport is directed on a solving of the following tasks:

– creation of steady traditions and motivations on the subject of physical education and mass sport as an important factor of healthy lifestyle provision;

– improvement of forms to appeal children and youth in systematic and full classes of physical exercises;

– system improvement of children-junior sport.

In the general educational establishments a purpose of physical education is being realized by a complex of educational, therapeutic and up breeding tasks:

– creation of general notions about physical culture, its importance in human life, preservation and improvement of health, physical development;

– expansion of motion experience, improvement of skills of vital motion

actions, their use in the everyday and game activity;

– expansion of functional possibilities of child organism through a purposeful development of main physical qualities and natural abilities;

– creation of value orientations on the subject of use the physical exercises as one of the main factors of healthy lifestyle;

– creation of practical skills for individual classes of physical exercises and spending of active rest.

Creation and realization of a desire to use motion activity in everyday activities occur on the basis of the individual peculiarities and needs of each person. Creation for pupils a conviction in need of systematic use of different forms of physical education gets a primary importance. Content and dimension of corresponded classes are determined on the basis of scientifically reasoned standards for each group of schoolchildren, practical motives and values considering a nature of motion activity.

The content of physical education of pupils in general educational establishments is regulated by a curriculum that is characterized by a directivity on a realization of didactic principles, a planning of educational material according to aged-sexual peculiarities of pupils, their interests, material and technical provision of academic process, staffing support.

Educational material expects a solving of tasks of physical education of pupils and consists of theoretical and practical sections. The content of theoretical section of the program expects a fixing of knowledge from the history of physical culture, psycho-pedagogical and medical-biological basics of physical exercises performing, the rules of control and self-control. The practical section of program contains and educational material in the form of variable modules. The practical classes are directed on the improvement of indexes of the physical development, functional state of organism, development and improvement of the physical qualities, acquisition of motion skills. The content of training classes includes the sections of gymnastics, track-and-field athletics, swimming, ski sport (for the snowless regions – cross-country), tourism, sport games.

Physical education in the general educational establishments is realized in different forms that are interconnected and complement each others. Lesson of physical culture is a basic form of physical education that is conducted by a PE teacher due to the curriculum and educational program. In the content of lesson, all components of educational-upbringing process are presented: aim, content, means, methods, organization and control activities. The essence of lesson as a whole dynamic system is in collective-individual cooperation of teacher and pupils and as a result is the fixing of knowledge, skills and abilities, development of physical qualities and functional

possibilities of organism.

Scientific studies [34; 49; 185] and work practice of general educational establishments testify that PE lesson with its organizational and didactic peculiarities doesn't ensure a sufficient dimension of motion activity for pupils. That's why a system of extracurricular form of physical education is created (chart 3.4).

Extracurricular forms of physical education are divided into three groups: physical exercises performing in the regime of study day, off-hour and out-of-school classes of physical exercises.

Physical education during the study day is being organized within the class, under the guidance of a head teacher with the help of seniors-instructors and methodical guidance of PE teacher. This group of classes of physical exercises includes gymnastics before lessons, physical warms-up, games during the organized breaks.

Extracurricular work of physical education is a system of events and organized classes of physical exercises that are being carried out at schools under the guidance of teachers, institutions of pupil self-governing.

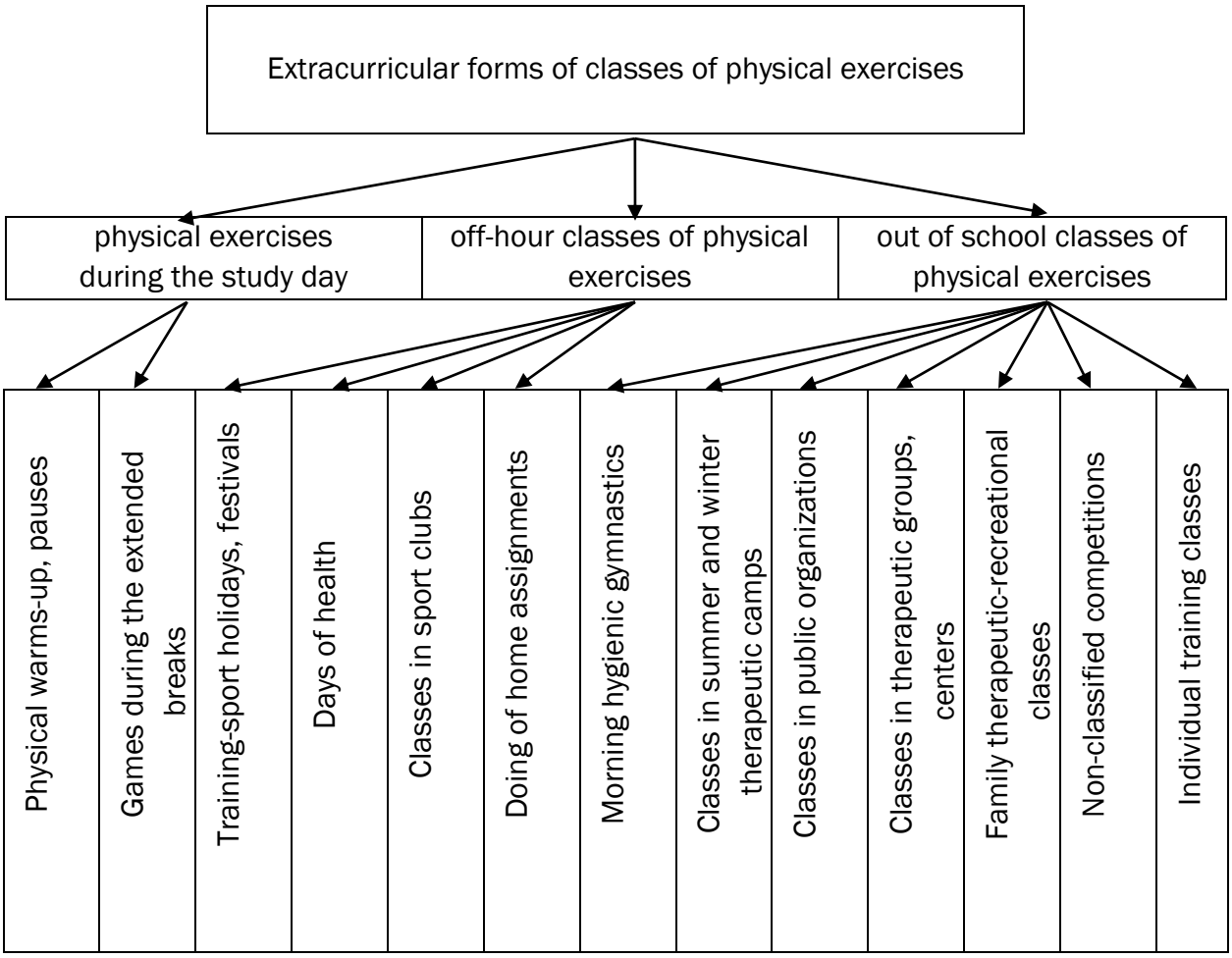


Figure 3.4. **Extracurricular forms of physical education of teenagers**

The concept of extracurricular work is wide enough and includes different by the content, mission, and methods of holding, forms and ways of class guidance. Forms of extracurricular works are kinds of unions, organization ways of pupils and teachers for common motion activities after lessons and also specific fitness-therapeutic and sport events, aimed on mass or differential pupil audience. Extracurricular forms of physical education include classes in sport clubs, classes in groups of general physical training, mass fitness-sport events, touristic hikes and holidays, days of health, competitions. They must be correlated during a planning to a content of PE lessons, promote a fixing of study material, expected by a curriculum.

Out-of-school work is sport-mass and recreational activities of out-of-school institutions for children and youth. Physical education of pupils out of school is realized by family, out-of-school institutions, children-youth sport schools, childish sightseeing-tour stations and other cultural and educational establishments and organizations. With the general educational establishments, they take part in organization of sport-mass and touristic work with pupils in summer and winter camps.

Out-of-school organizations and establishments assume the obligations about organization of children group, clubs, sport sections. As a whole with PE lessons, the correctly organized out-of-class lessons ensure a continuity and effectiveness of physical education.

The main function of out-of-class forms of physical education is a creation of the most favorable conditions for training of skills for systematic classes of physical exercises. During the out-of-class lessons, learned PE exercises, received knowledge get fixed and improve. Otherwise, physical education is not limited by school lessons. Інакше кажучи, шкільними уроками фізичне виховання не обмежується. Lessons are just a start of all complex system of this process that expects classes during the school day, out-of-class and out-of-school fitness-sport and therapeutic activities.

The structure of classes of physical exercises expected their general pedagogical directivity and specific content that provided a solving of physical education tasks. Analysis of pedagogical essence of different forms of physical education organization for schoolchildren shows that not each of them includes all components of educational process: teaching of physical exercises; assimilation of PE knowledge; development of physical qualities; specialized sport training. So, for example, a learning process in details can be presented in fixed classes, and the improvement of physical qualities – in out-of-class, where the choice of study material will be determined by the tasks of

increasing the functional possibilities of pupils. This fact testifies about the importance of each form of classes in a pedagogical process of physical education and requires their precision, consistency.

Withdrawal of any form of classes from the organized structure of physical education process declines essentially its effectiveness and consequently excludes the achievement of desirable pedagogical result. Thereby, it was performed a differentiation of extracurricular forms of physical education of teenagers according to a directivity of their motion activity (figure 3.5).

So, all forms of physical education of schoolchildren are united by a common purpose and tasks. At the same time, each of them providing the solving of general tasks and also tackles specific ones. That's why for an optimal solving of all tasks of physical education it is worth to practice various forms of classes by an introduction of fitness-therapeutic events in the day regime, wide encouraging of pupils to the classes in sport clubs and sections, popularization of extra optional classes, renewal of mass sport-art holidays and days of health, different contests and competitions, creating the necessary conditions for that. Special attention during the extracurricular classes must be paid on a realization by schoolchildren in everyday life the skills, knowledge and abilities received in lessons of physical education.

The distinctive feature of extracurricular forms of physical education of pupils is their voluntariness. That's why during the experiment, an attention was paid on the interest of teenagers to sport-mass activities. It was achieved first by high emotionality of classes. It was important that every pupil could prove himself during the classes irrespective of a level of own physical training.

Main tasks of physical exercise in the regime of study day: improvement of health, improvement of working capacity (physical and mental), complex health recovery of pupils and also the increasing of time amount that is given out for physical education.

Morning hygienic gymnastics is a complex of physical exercises that is being performed with aim for a rapid transition from a state of sleep to a state of cheerfulness, increasing of physical capacity and hardening of organism. The main task of morning hygienic gymnastics is an incitation of those physiological functions of organism that weaken during the sleep. It is scientifically proved that under the influence of morning gymnastic exercises, not only blood circulation gets better and a locomotor apparatus strengthens but also the nervous system gets better and activities of brain-cortex are stimulated.

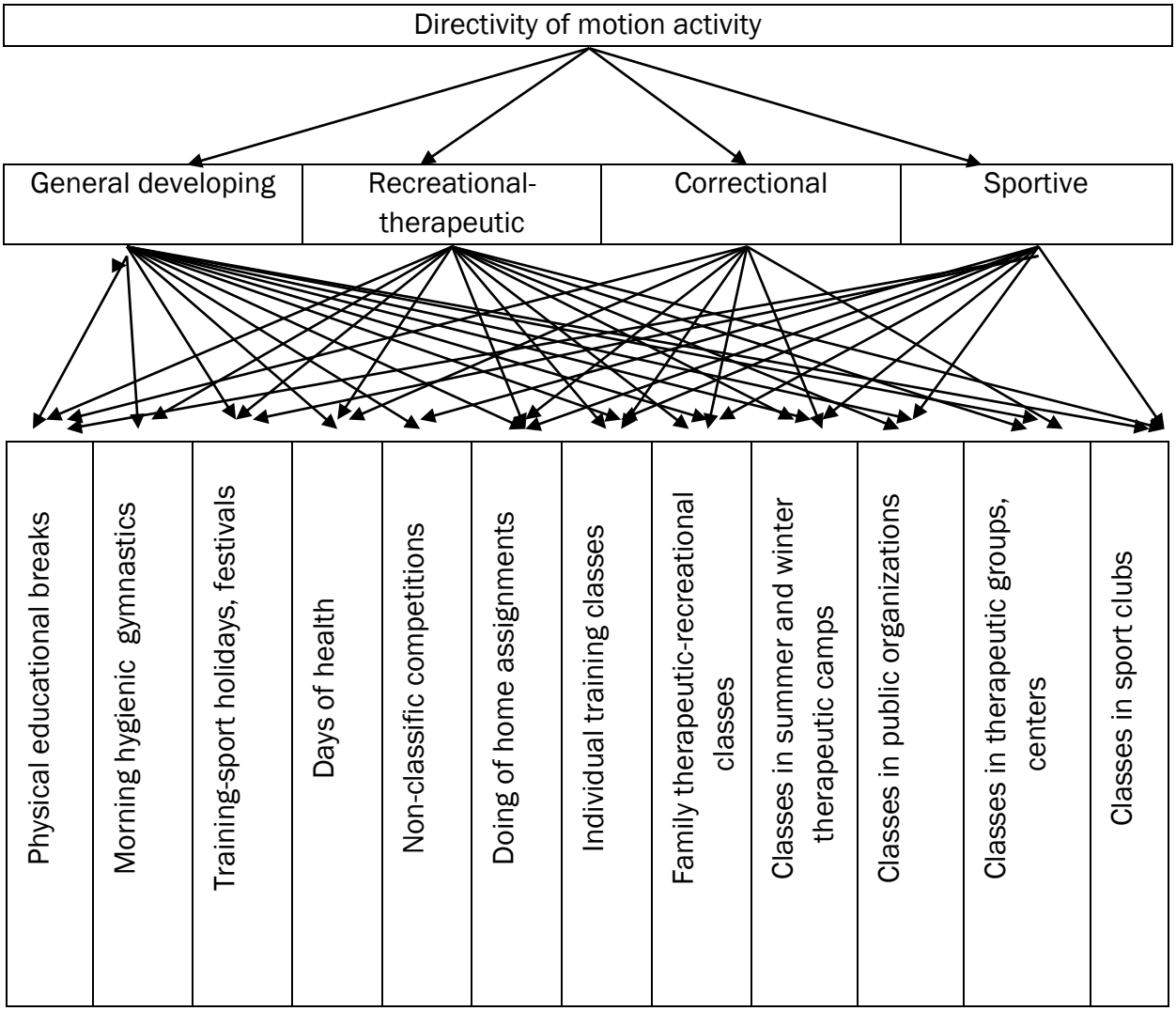


Figure 3.5. **Differentiation of extracurricular forms of physical education of teenagers according to the directivity of their motion activity**

The general body tone increases and activities of cardiovascular system of a pupil accelerate after the gymnastics performing. Consequently, a movement of congested, deposited blood restores, precisely in belly cavity of organism. There are several rules of gymnastics exercises performing in the morning for getting their positive influence on a health state of schoolchildren. Firstly, it is a correct selection of exercises. Morning hygienic gymnastics includes: breathing exercises, exercises aiming on a development of all groups of muscles and flexibility. Exercises of static nature aiming on endurance and with large loads are not recommended to perform.

It is also worth to remember about keeping a sequence of exercises, their priority order and necessary amount of repetitions. For instance, morning

gymnastics can be performed in the following order: walking, slow running, stretching with deep breath and breath out, exercises aiming on flexibility and mobility of arms, neck, corpus and legs, strength exercises without overloading or with minor overloading for arms, corpus and legs. Different bents and stretching, squatting, jumps, exercises aiming on relaxation.

Selection of exercises with gradual increasing of physical loading on a pupil's organism is logical. It is necessary to start every exercise in a slow tempo and rise gradually an amplitude of movements the average dimensions. Change of the starting positions, amplitudes of movements, tempo, repetitions, pauses for rest – all this ensures a correct dosage of physical exercises and accordingly a positive influence on a pupil's organism.

It is worth to add new exercises, change starting positions, etc. every 7-10 days before morning gymnastics for a provision of development of physical health for pupils. All this is necessary to do considering the starting level of physical training and its dynamics. Right after the performing of morning gymnastics, it is recommended to hold additionally the measures of organism hardenability (water procedures)

The oriented complexes of morning hygienic gymnastics were developed for teenagers.

Complex 1

1. Walking, easy running, running 5 min, walking 45-50 s.

2. S. p. – m. s. 1-2 – arms sideward – up, rise on tiptoes, stretch; 3-4-s. p. 6-8 times.

3. S. p. – standing legs apart, arms bent at the elbows, hands to the shoulders 1-4– roundabout by arms ahead, 1- 4– backwards, 4-6 times.

4. S. p. – standing legs apart, arms sideward 1– put your arm around the shoulders; 2–s. p. 8-10 times.

5. S. p. – the same, hands on hips. 1– bent to the left, right hand along an arc of a circle up – to the left; 2– s. p.; 3 – bent to the right, hand along an arc of a circle up – to the right; 4– s. p., 8-10 times.

6. S. p. – m. s. 1– arms sideways up, rise on tiptoes; 2– bent forward, touch by the finger-tips to floor; 3- straighten up, arms forward – up; 4– s. p. 6-8 times.

7. S. p. – m. s., hands on hips. 1– squat down on left, arms forward; 2– s. p. 8-10 times.

8. S. p. – m. s., hands on hips. 1-4– jumps on left leg; 1-4– jumps on right leg; 1-4–jumps on both. 3-4 times.

9. March in place 1 min.

10. S. p. – m. s. 1-2 – arms sideways up; 3-4– s. p. 6-8 times.

Complex 2

1. Walking, easy running 5-7 min, walking 50-60 s.

2. S. p. – m. s. 1– arms sideward, left back to toe, bend; 2– close left leg to the right, rise on tiptoes, hands up, palms inward, stretch; 3–right leg backward to toe, arms sideward, bend; 4– s. p. 4-6 times to both sides.

3. S. p. – m. s., hands on hips. 1– lunge left, clap above a head; 2– s. p.; 3– lunge right, clap above a head; 4– s. p. 4-6 times to both sides.

4. S. p. – legs apart, hands on hips. 1– bent, bend, hands up; 2– s. p. 6-8 times.

5. S. p. – knee lean. 1– rise a corpus up, rounded back; 2– lower a corpus, bend. 8-10 times.

6. S. p. – standing legs apart, arms bent in front of chest, elbows to the sides. 1–bend left leg, turn corpus to the left; 2– bend forward, touch toes of left leg by elbow of left arm; 3-4– s. p. 5-6 times to each side.

7. S. p. – squat on the whole foot, taking shin by hands. 1– straighten legs, touch knees by forehead 6-8 times.

8. S. p. – m. s. 1 – jump on right, left leg forward – up, clap hands above left leg, 2-3– jump on left, right forward – up, clap under right; 4– s. p., 6-8 times.

9. Easy running and walking 2 – 3 min.

10. S. p. – m. s. 1-4 – arms along an arc of a circle forward – up – t the sides, breath in; 5-8– arms sideward in s. p., each 4-6 times.

Physical culture breaks – breaks between learning or individual mental classes that are directed on a renewal of working capacity of a pupil. Such form of active rest gives a chance to prevent tiredness of pupils, relieve muscular and mental stress and also prevent some posture disturbance. There are proper rules of holding the physical culture breaks. Firstly, it is necessary to do physical exercises outdoors or in well-aired room. Duration of physical culture breaks fluctuates from 5 to 15 min., and a frequency of its inclusion during the day establishes according to the peculiarities of loading, psychoneural tension, time of starting the tiredness and schedule.

Selected exercises must be directed mostly on relaxation of muscles that are involved in work. Because of a continuous writing work of pupils, exercises for muscles of arms, exercises on feeling of correct posture and back exercises will be useful. It is worth to observe that physical culture break should include exercises that comprise all groups of muscles. Scientific researches testify about a connection of functional state of central nervous system and tonus of muscular tissue that is an ability to relax requires an active participation of nervous system and willed efforts of a pupil.

Sport-mass work includes such important form of physical activity as *gymnastics before the academic classes*. It is hold at the beginning of study day and educates a habit of pupils to do physical exercises systematically. In its turn, it realizes the therapeutic tasks of physical education: metabolic processes of organism get activated, a muscular system strengthens, and a health state of pupils gets better. The performing of gymnastic exercises before the academic classes helps a pupil to get into the work and improves the preconditions of its organization.

It is recommended to do gymnastics before the academic classes outdoors 8-10 min length with a gradual increasing and decline of physical loading. The complex of exercises must be directed on a development of all groups of muscles and developed considering the rules of sequence.

Gymnastics can be started for example with the exercises for muscles f arms and shoulder girdle, continue with the exercises for muscles of corpus, for posture, then use the exercises for muscles of legs and also exercises for general physical influence (running, jumps, dancing elements), and finish gymnastics with the exercises of restful nature.

Recommended complexes of physical exercises:

Complex 1

Exercise 1 March in place, keeping a correct posture (32-48 scores).

Exercise 2 S. p. – m. s. 1-2 – right back on toe, hands up – outwards, bend, 3-4– s. p., 5-8– the same by left (4-6 times).

Exercise 3 S. p. – arms on the nape. 1-2 – thrust having squatted, 3-4– s. p., 5-6– rise on tiptoes, hands up, 7-8 – s. p. (4-6 times).

Exercise 4 S. p. – arms sideward. 1-2– right to the right on tiptoe, right arm on hips, left hand up, bent to the right, 3-4 – get back in s. p., 5-8 – the same with left (4-6 times).

Exercise 5 S. p. – standing legs apart, hands on hips. 1-4– circle by corpus to the right, 5-8 – the same to the left (4-6 times).

Exercise 6 S. p. – march in place, keeping a correct posture (32-48 scores). Breathe rhythmic during the march in place.

Exercise 7 S. p. – m. s. 1– step by left forward, right arm sideward, 2– close right, left arm sideward, 3– head bent backward, hands up, 4– get back in s. p, 5-8 – the same by step of left back (2-4 times).

Complex 2

By command to take a position of correct posture and keep it during 5-6 c.

Exercise 1 March in place, keeping a correct posture (32-48 scores).

Exercise 2 S. p. – m. s. 1– step by right to the right, arms up to shoulders, 2-3– rise on tiptoes, hands up – outwards, 4– close left and get back in s. p., 5-8– the same by left to the left (4-6 times).

Exercise 3 S. p. – standing legs apart, hands on hips. 1– turn of corpus to the right, right arm sideward, 2 – s. p., 3-4– the same turn of corpus left (6-8 repetitions).

Exercise 4 S. p. – standing legs apart, hands behind his back. 1-2– bent of corpus to the right, left hand up, 3-4– s. p., 5-8 the same bent of corpus to the left with change of hands position (4-6 times).

Exercise 5 S. p. – standing legs apart, hands on hips. 1-3– tree springy squats, 4– s. p. (6-8 times).

Exercise 6 March in place, keeping a correct posture (на 32-48 scores). Breathe rhythmic during the march in place.

Exercise 7 S. p. – standing legs apart. 1– right hand on hips, 2– left hand on the nape, 3– rise on tiptoes, hands up, 4– s. p., 5-8– the same with a change of arms (4-6 times).

Mass therapeutic and sport events are being organized in extracurricular time, at the weekends, or on holidays with a purpose to encourage a pupil youth to the systemic physical classes, improvement of physical readiness and health improvement. Such events are held under a guidance of educational establishment, sport clubs, etc. Such form of physical education like *competition* is often used within the mass events of a sportive nature. The most popular kinds of competitions are contests, olympiads, festivals, quizzes, sports days, etc.

The main feature of such form of physical education is determination and development of physical and creative opportunities of pupils, an activation of cognitive activity. Usually, competitions include strength tests – jumps, pull-up, push-up, relays. This increases a physical training of pupils and their interest to physical exercises in general.

Homework – a special form of physical activity of schoolchildren, directed on a health improvement, increasing of motion regime, development of physical qualities. Homework always includes exercises with some things, for example: dumbbells, sticks, pillows. Special attention is paid on the posture exercises. Tempo of the tasks performing is calm, without a holding breath.

Homework is predictable by a school program and connected between each other and the other lessons. Nature of the connection expects a chance to perform a next stage of program only under the condition of full fixing o the previous one.

Special form of physical activity of schoolchildren was *groups of general physical training*. They are intended for pupils in the secondary school with a low level of physical training and functional abilities or for pupils of preparatory medical group. Increasing of level of physical activity for pupils are realized with the help of encouraging more schoolchildren to the performing of a certain kind of exercises. Due to the holding of classes two, three times a week 45-60 min., motion training of pupils gets better noticeably. The complex of exercises is selected depend on a health state of schoolchildren and performed by stages (preparatory, basic, finishing stage) in a format of lesson. Classes in groups of general physical training help pupils to develop necessary physical qualities, strength, flexibility, endurance.

Individual training classes is a staged form of physical activity of pupils that expects an improvement of motion skills and abilities, betterment of physical training and increasing of sports knowledge level of pupils. Such way of the introduction of physical education in a life of pupil youth allows not only increasing a durance of lessons of physical exercises but improving an effective learning of study material. Individual training class consists of preparatory, basic, finishing parts. Preparatory is divided in combined developed (march, easy running, exercises for all groups of muscles) and special (elements of main exercises, imitational and specially-training exercises).

In the main part of individual class, training occurs according to a precise sequence. Having prepared muscles and bone apparatus of organism in the special part, a pupil firstly becomes familiar with the technique of movements and improves it, does exercises for speed, then exercises for the development of strength are included gradually in the classes, at the end of main part a pupil does exercises for endurance.

The individual training class finishes with easy running that transfers into marching and also exercises for relaxation. Such sequence ensures a gradual decline of physical loading and transferring of organism in relational state of peace.

Organizers of any forms of physical activity have to provide instructions on subject of injuries prevention and advice about the correct organization of training. Firstly, it is a compulsory performing of warming-up before strength exercises. Secondly, an increasing of strength loading is always occurred by grades and steadily. Thirdly, a selection of exercises must occur considering the abilities of learning their techniques and be expected for all skeletal muscles. Then, it is necessary to stop immediately performing the exercises in the cases of feeling ache of muscles, joints.

In the process of individual classes of physical exercises it was recommended to intensify and increase duration of physical loadings. Due to a low output level of training, the increasing of loadings sums 3-5% in the day in reference to the achieved level, and after the achieved high indexes – less. The increasing of physical loading was proposed to do with the help of:

- increasing of number of classes;
- increasing of duration of classes;
- increasing of motive density of classes;
- increasing of intensity of classes;
- permanent extension means of training;
- increasing of complexity and amplitude of movements.

Running, ski marching, swimming, rhythmic gymnastics, etc. were recommended for a diversified training. Exercises for endurance (running at a low and average pace), muscle-strengthening exercises for large muscular groups (squatting, hanging leg raises on a crossbar or gym wall-bars, transition from lying position into the sitting position, etc.), exercises for joints of spine, arms and legs and also during the change of body position (corpus bent forward, backward, sideward, etc.) were proposed to perform in the therapeutic training. Also, it was recommended to use marching, athletic gymnastics, cycling, swimming. Muscle-strengthening exercises were compulsory and they can be dosed according to the peculiarities of teenagers. As for an intensity of physical loadings, they are regulated with the help of indexes of HR. Standard for beginners is 120-130 bpm., for schoolchildren with reduced functional indexes – 130-140 bpm. Healthy pupils can do physical exercises not exceeding HR 150–160 bpm. In order to calculate an optimal intensity of physical loading, lower and top limits of HR were determined and also an optimal oscillation magnitude of HR. The methods of calculation of effective and training levels of heart rate was carried out due to such formulas: 220 – age = max. HR; Max. HR – HR of peace = training HR; (Training HR x 0.6) + HR of peace = lower limit HR; (Training HR x 0.85) + HR of peace = top limit HR; Effective level HR is between lower and top.

Planning of individual classes of teenagers was provided by pupils under the guidance of a teacher with a purpose to determine a sequence of solving the problems about the increasing the level of functional readiness. Perspective planning of individual classes was provided for a year. Pupils planned to achieve clear results in the process of sport-mass and therapeutic activities dependent on health state, output level of physical and sport-skilled training.

Taking into account the recommendations of B. M. Shyian [175], such moments were considered in the creation of skills to do physical exercises individually:

1. Exercises were proposed for individual performing only after they were learnt during the PE lesson in the presence of a teacher. Interim tasks were set to create an interest to perform physical exercises. Gradually, with the help of different stimulating methods, pupils were transferred from an orientation on a result to the orientation on a process of activities; they were plied with need to do not only for the achievement of a certain aim but just for pleasure.

2. The girls were acquainted with the methods of control over own actions and evaluation the correctness of their performing. During the performing of physical exercises, pupils evaluated the performing of exercises by others, pointing the mistakes. So, there were the basics of skills to evaluate and control the actions for those who perform and who evaluate. Teenagers were proposed to determine the difference in the effectiveness of influence of a certain physical exercise on the basis of analysis and comparison of own muscular feelings. For example, bending and extension of arms in front leaning rest in the position of arms in different attempts with different width, with different positions of wrist, with position of legs at different heights, with different angle of bending in hip joints.

Creation of skills and abilities in the organization and methodology of individual activities was an important moment of learning how to do physical exercises individually. With this purpose, pupils were encouraged for a rational placement of utensils, distribution and collection of equipment, etc. Within the lesson, teacher commented an expediency of proposed sequence of exercises performing, ways of the organization of children. Schoolgirls were appealed to individual selection of exercises, determination of optimal amount of repetitions.

Effective individual classes of physical exercises are possibly under the condition of a calculation of received results. Specialists are prone to a necessity to keep a diary of physical education. In the process of experimental work «Health Diary» having developed by O. D. Dubohai was used. It was combined with the logs of self-control and contains the data of testing results (output, staged, outcome), information about a necessary level of knowledge, academic standards, achievements, content of tasks with recommendations of weekly loadings and quantitative indexes for an evaluation in each semester. The expediency of using a health diary was that received authentic information and objective evaluation at all stages of individual classes.

3.3 Examination of effectiveness of the experimental methods of study on motion activity and physical state of teenagers

For the examination of effectiveness of the developed methods of study on motion activity and physical state of teenagers, a pedagogical experiment was carried out with pupils of the 7th grade in general educational establishments № 14 and 19 in Lutsk. 187 teenagers of 12-13 years, exactly a control group – (43 boys and 54 girls) and an experimental group – (46 boys and 44 girls) took part in the pedagogical experiment.

The content of pedagogical experiment was that the organized-methodic provision of development the motion activity of teenagers in extracurricular forms of physical education was used widely with pupils of experimental group in the process of educational-upbringing activities. Pupils of control groups continued the classes without any changes.

Educational-upbringing activities of experimental and control groups had similar and dissimilar features.

Similar features were: the classes were held in the same conditions (stadium, park, gym, sports ground); teenagers of all groups had the same number of PE lessons; passing of control standards was provided by one panel of judges.

Dissimilar features: means and methods of physical education of teenagers of experimental group, and also their correlation and dosage of physical loadings were selected considering the individual peculiarities; in the experimental group a special theoretic training was conducted and it included the information about a correctness of performing the individual classes of physical exercises, self-control over a physical state, hygienic requirements and knowledge about a healthy lifestyle; the recommendations about the development of motion activity in the conditions of extracurricular activities were developed for pupils of experimental group; close cooperation of teachers with parents was held; homework was personal-oriented and had a various directivity (general developed, recreational-therapeutic, corrective and sportive).

At the beginning and at the end of the experiment, the indexes of daily motion activity of teenagers and physical state were analyzed: a level of physical development of children, functional abilities of organism, indexes of physical training were studied and a level of interest to the performing of physical exercises of teenagers was revealed.

The analysis of study results showed that after the conducting the experiment, the level of daily motion activity of teenagers of control and

experimental groups didn't change essentially due to all levels of motion activity, except a high level and a level of motion activity index of experimental group. The structure of daily motion activity of girls in experimental group in the end of the experiment is made up of basic regime (8.39±0.09 hrs), sedentary (6.51±0.05 hrs), low (6.36±0.07 hrs), average (2.41±0.04 hrs) and high (0.33±0.03 hrs). The same situation was during the analysis of a level of daily motion activity of boys. Particularly, a basic level is 8.42±0.07 hrs, sedentary – 5.39±0.06 hrs, low – 7.12±0.08 hrs, average – 2.58±0.03 hrs and high – 0.49±0.04 hrs (table 3.1, figure.3.6).

Indexes results of daily motion activity of teenagers in the experimental group were: basic level – 8.47±0,08hrs for girls and 8.35±0.11hrs for boys; sedentary level – 6.43±0.04hrs for girls and 5.24±0.05hrs for boys; low level – 5.51±0.05hrs for girls and 6.53±0.07hrs for boys; average level – 2.34±0.03hrs for girls and 2.33±0.04hrs for boys; high level – 1.25±0.05 hrs for girls and 1.55±0.06 hrs for boys.

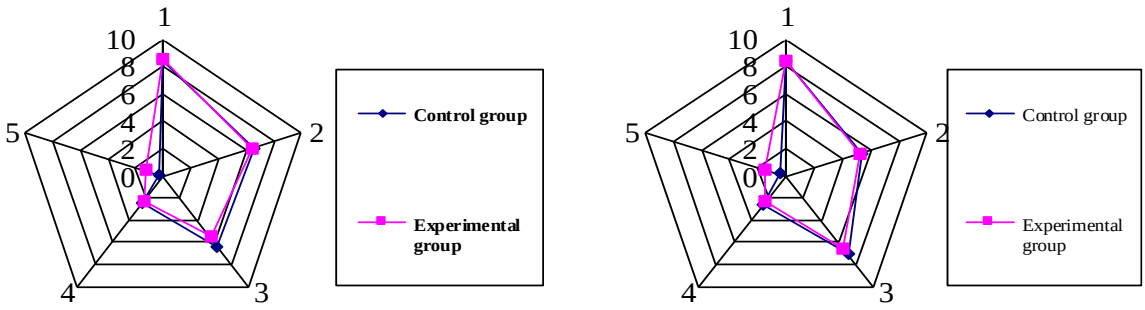
It is worth to remark that the structures of motion activity (basic, sedentary, low, average) after the pedagogical experiment of teenagers in control and experimental groups almost didn't differ from each other (P>0.05). However, an index of high level of daily activity of children in the experimental group differed from the analogical indexes of teenagers in the control group (P<0.001) and corresponds the hygienic standards due to the time of specially organized motion activity.

Table 3.1

Indexes of daily motion activity of teenagers in the control and experimental groups after the pedagogical experiment, $(\overline{X} \pm S\overline{x})$

Physical activity level	Sex	Group of pupils		Authenticity of difference, *P*
		control	experimental	
Basic, *hrs*	G	8.39±0.09	8.47±0.08	>0.05
	B	8.42±0.07	8.35±0.11	>0.05
Sedentary, *hrs*	G	6.51±0.05	6.43±0.04	>0.05
	B	5.39±0.06	5.24±0.05	>0.05
Low, *hrs*	G	6.36±0.07	5.51±0.05	>0.05
	B	7.12±0.08	6.53±0.07	>0.05
Average, *hrs*	G	2.41±0.04	2.34±0.03	>0.05
	B	2.58±0.03	2.33±0.04	>0.05
High, *hrs*	G	0.33±0.03	1.25±0.05	<0.001
	B	0.49±0.04	1.55±0.06	<0.001
Index of motion activity, *points*	G	32.45±0.41	34.83±0.39	<0.001
	B	33.52±0.53	37.04±0.45	<0.001

The analysis of indexes results of daily activity level of teenagers of control and experimental groups after the pedagogical experiment showed that the children had an essentially improved level. Then, the girls of experimental group got an index – 34.83±0.39 points and accordingly the boys – 37.04±0.45 points. These indexes of teenagers of control group stayed without any changes.



A *B*

Figure 3.6. **Characteristics of daily motion activity of girls (A) and boys (B) in control and experimental groups after the pedagogical experiment**

Notes: 1 – basic level, 2 – sedentary level, 3 – low levels, 4 – average level, 5 – high level.

It is known that a level of physical training points on the effectiveness of physical education and capacity of a human to do any work. The analysis of average results of physical training testing of teenagers in experimental and control groups before the experiment (table 3.2) revealed that the results of physical training of children in experimental and control groups were nearly equal due to all indexes (P>0.05). The average indexes of girls in control group in hanging pull-up lying were – 6.63±0.35 times contrary to – 6.48±0.66 times in experimental group, results of bent arm hanging were – 10.51±1.87 s in control group contrary to 10.04±1.87 s in experimental group, results of standing long jump were – 135.6±3.02 cm in control group contrary to 136.2±3.22 cm in experimental group, lifting in a sitting position in 30 s of girls in control group 14.19±0.55 times and accordingly 13.69±0.34 times – girls in experimental group, results of running 1000 m were – 8.05±0.23 min of girls in control group and accordingly 8.12±0.26 min of girls in experimental group, indexes of agility and speed of girls in control group were 13.02±0.35 s and 11.47±0.26 s and accordingly 13.08±0. 24 s and 11.45±0.28 s of girls in

experimental group, results of flexibility indexes, accordingly, in control group 8.49±1.63 cm contrary to 8,78±1.45 cm in experimental group. We observed a similar situation in the analysis of average results of physical training testing of boys.

Table 3.2

State of physical training of teenagers in control and experimental groups before the pedagogical experiment, $(\overline{X} \pm S\overline{x})$

Index	Sex	Group of pupils		Authenticity of difference, P
		control	experimental	
Hanging pull-up lying, times	G	6.63±0.35	6,48±0.66	>0.05
Hanging pull-up, times	B	4.28±0.44	4.12±0.54	>0.05
Bent arm hanging, s	G	10.51±1.87	10.04±1.87	>0.05
	B	18.21±1.94	17.98±1.26	>0.05
Standing long jump, cm	G	135.6±3.02	136.2±3.22	>0.05
	B	167.2±2.58	165.7±2.35	>0.05
Lifting in a sitting position in 30 s, times	G	14.19±0.55	13.69±0.34	>0.05
	B	18.41±0.53	18.24±0.42	>0.05
Running 1000 m, min	G	8.05±0.23	8.12±0.26	>0.05
Running 1500 m, min, s	B	9.33±0.17	9.41±0.26	>0.05
Shuttle run, 4 x 9 m, s	G	13.02±0.35	13.08±0.24	>0.05
	B	11.83±0.33	11.78±0.39	>0.05
Running 60 m, s	G	11.47±0.26	11.45±0.28	>0.05
	B	10.56±0.31	10.54±0.36	>0.05
Bent forward from a sitting position, cm	G	8.49±1.63	8.78±1.45	>0.05
	B	3.68±0.65	4.06±0.72	>0.05

So, the results of physical training of children at the middle school age in the experimental and control groups at the beginning of the experiment were almost equal by all indexes (P>0.05).

The studies that were conducted after the pedagogical experiment, allowed revealing a dynamics of physical training indexes. The comparison of the received results with changes of analogical indexes of pupils in control group allowed determining the effectiveness of experimental methodology.

Due to the results of our studies, the indexes of strength qualities in the groups of schoolchildren who took part in the experiment didn't have likely difference among themselves (P>0.05) at the beginning of the experiment. After the experiment the schoolchildren in experimental group had, as it is

presented in table 3.3, some positive changes.

Table 3.3

State of physical training of teenagers in experimental group, $(\overline{X} \pm S\overline{x})$

Index	Sex	Beginning of study	End of study	Authenticity of difference, P
Hanging pull-up lying, times	G	6.48±0.66	12.24±0.28	<0.001
Hanging pull-up, times	B	4.12±0.54	6.05±0.23	<0.001
Bent arm hanging, s	G	10.04±1.87	13.32±0.81	<0.05
	B	17.98±1.26	23.37±1.25	<0.001
Standing long jump, cm	G	136.2±3.22	141.8±2.67	<0.05
	B	165.7±2.35	175.4±2.11	<0.05
Lifting in a sitting position in 30 s, times	G	13.69±0.34	15.93±0.41	<0.001
	B	18.24±0.42	21.58±0.62	<0.05
Running 1000 m, min, s	G	8.12±0.26	8.03±0.19	>0.05
Running 1500 m, min, s	B	9.41±0.26	9.18±0.26	<0.05
Shuttle run, 4 x 9 m, s	G	13.08±0.24	12.35±0.28	>0.05
	B	11.78±0.39	11.14±0.19	>0.05
Running 60 m, s	G	11.45±0.28	11.27±0.21	>0.05
	B	10.54±0.36	10.18±0.19	>0.05
Bent forward from a sitting position, cm	G	8.78±1.45	12.49±0.87	<0.001
	B	4.06±0.72	9.45±0.22	<0.001

The amount of times in hanging pull-up lying of girls and hanging pull-up of boys increased significantly. So, boys got better their results in hanging pull-up на 1.92 times as many and girls – in hanging pull-up lying 5.76 times as many (P <0.001). Due to the test «Bent arm hanging », indexes of static strength endurance of girls got better by 3.28 s (<0.05) as many and boys by 5.39 s (<0.001). Indexes of «explosive» strength due to the test «Standing long jump» got better by 5.6 cm for girls (<0.05) and by 5.39 cm for bys (<0.05).

We observed the similar situation within the analysis of indexes of dynamic strength endurance due to the test «Lifting in a sitting position from a lying position for 30 s». At the end of the experiment, girls did this exercise – 15.93±0.41 times and boys – 21.58±0.62 times, that is accordingly by 2.24 and 3.34 times more than at the beginning of the experiment.

During the period of pedagogical experiment, the used methods allowed

us improving the flexibility of boys and girls in experimental group by 5.39 cm and 3.71 cm accordingly (<0.001). At the end of the experiment, the results of control testing of shuttle run 4 x 9 m got better by 0.64 s for boys and by 0.73 s for girls in experimental group but they are not probable. (P>0.05).

Similar situation is being observed during the analysis of indexes of the speed development (running 60 m). At the beginning of study, boys from the experimental group have run this distance for 10.18±0.19 s, and girls – for 11.14±0.19 s, that is by 0.36 s and by 0.18 s faster than it was at the beginning of study, but also they are not probable (P>0.05).

The analysis of physical training of teenagers from control group showed (table 3.4) that statistically minor change (P>0.05) occurred in most of these data at the end of the study in comparison with the indexes at the beginning of study.

Table 3.4

State of physical training of teenagers in control group, $(\overline{X} \pm S\overline{x})$

Index	Sex	Beginning of study	End of study	Authenticity of difference, P
Hanging pull-up lying, times	G	6.13±0.35	6.87±0.14	>0.05
Hanging pull-up lying, times	B	4.28±0.44	4.31±0.09	>0.05
Bent arm hanging, s	G	10.51±1.87	10.49±0.64	>0.05
	B	18.21±1.94	17.52±1.08	>0.05
Standing long jump, cm	G	135.6±3.02	134.2±2.76	>0.05
	B	167.2±2.58	167.1±2.63	>0.05
Lifting in a sitting position in 30 s, times	G	14.19±0.55	12.47±0.38	>0.05
	B	18.41±0.53	18.27±0.49	>0.05
Running 1000 m, min, s	G	8.05±0.23	8.09±0.21	>0.05
Running 1500 m, *min,* s	B	9.33±0.17	9.37±0.28	>0.05
Shuttle run, 4 x 9 m, s	G	13.02±0.35	12.56±0.32	>0,05
	B	11.83±0.33	11.58±0.25	>0.05
Running 60 m, s	G	11.57±0.26	11.43±0.17	>0.05
	B	11.06±0.31	10.52±0.16	>0.05
Bent forward from a sitting position, cm	G	8.49±1.63	8.52±0.61	>0.05
	B	3.68±0.65	4.18±0.05	>0.05

The analysis of indexes results of agility development (shuttle run 4 x 9 m) testified that the results of control testing of shuttle run 4 x 9 m at the end of experiment got better by 0.25 s for boys and by 0,46 s for girls, in comparison with results that were shown by these children at the beginning of study (P>0.05).

The same situation was observed during the analysis of indexes of speed development (running 60 m), the results of control testing of running got better at the end of study: by 0.54 s for boys and by 0.14 s for girls, in comparison with the results that were shown by children at the beginning of study.

The analysis results of the increase rate of indexes that show the strength of arm muscles (hanging pull-up lying, girls; hanging pull-up, boys, an amount of times) showed that it increased by 0.11±0.96 times for boys and 0.07±0.94 times for girls in the control group (P>0.05).

The indexes analysis of dynamic strength endurance by the testing «Lifting in a sitting position from a lying position for 30 s, an amount of times» showed that teenagers of control group at the end of study have a decline of results, exactly boys – by 0.14±0.41 times and girls – by 1.72±0.62 times less than at the beginning of study. Increasing of motion activity caused an increasing of physical training of pupils in experimental group. (table 3.5, figures 3.7, 3.8).

Table 3.5

State of physical training of teenagers in control and experimental groups after the pedagogical experiment, $(\overline{X} \pm S\overline{x})$

Index	Sex	Group of children		Authenticity of difference, P
		control	experimental	
Hanging pull-up lying, *times*	G	6.87±0.14	12.24±0.28	<0.001
Hanging pull-up, *times*	B	4.31±0.09	6.05±0.23	<0.001
Bent arm hanging, s	G	10.49±0.64	13.32±0.81	<0.05
	B	17.52±1.08	23.37±1.25	<0.001
Standing long jump, cm	G	134.2±2.76	141.8±2.67	<0.05
	B	167.1±2.63	175.4±2.11	<0.05
Lifting in a sitting position in 30 s, times	G	12.47±0.38	15.93±0.41	<0.001
	B	18.27±0.49	21.58±0.62	<0.05
Running 1000 m, min, s	G	8.09±0.21	8.03±0.19	>0.05
Running 1500 m, min, s	B	9.37±0.28	9.18±0.26	<0.05
Shuttle run, 4 x 9 m, s	G	12.56±0.32	12.35±0.28	>0.05
	B	11.58±0.25	11.14±0.19	>0.05
Running 60 m, s	G	11.43±0.17	11.27±0.21	>0.05
	B	10.52±0.16	10.18±0.19	>0.05
Bent forward from a sitting position, *cm*	G	8.52±0.61	12.49±0.87	<0.001
	B	4.18±0.05	9.45±0.22	<0.001

The largest difference (P<0.05-0.001) between teenagers in control and experimental groups is observed by such tests: hanging pull-up, bent arm hanging, standing long jump, lifting in a sitting position in 30 s, bent forward from a sitting position.

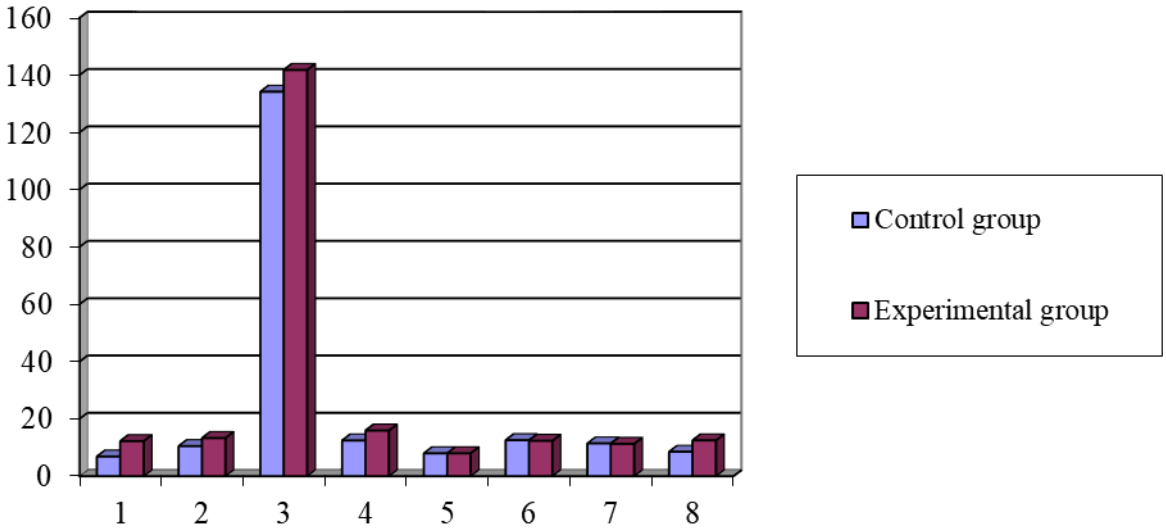


Figure 3.7 **Changes of indexes of physical training of girls in control and experimental groups after the pedagogical experiment**

Notes: 1) hanging pull-up lying, *times*; 2) bent arm hanging, s; 3) standing long jump, *cm*; 4) lifting in a sitting position in 30 s, *times;* 5) running 1000 m, min, *s;* 6) shuttle run, 5) 4 x 9 m, *s;* 7) running 60 m, *s*; 8) bent forward from a sitting position, *cm.*

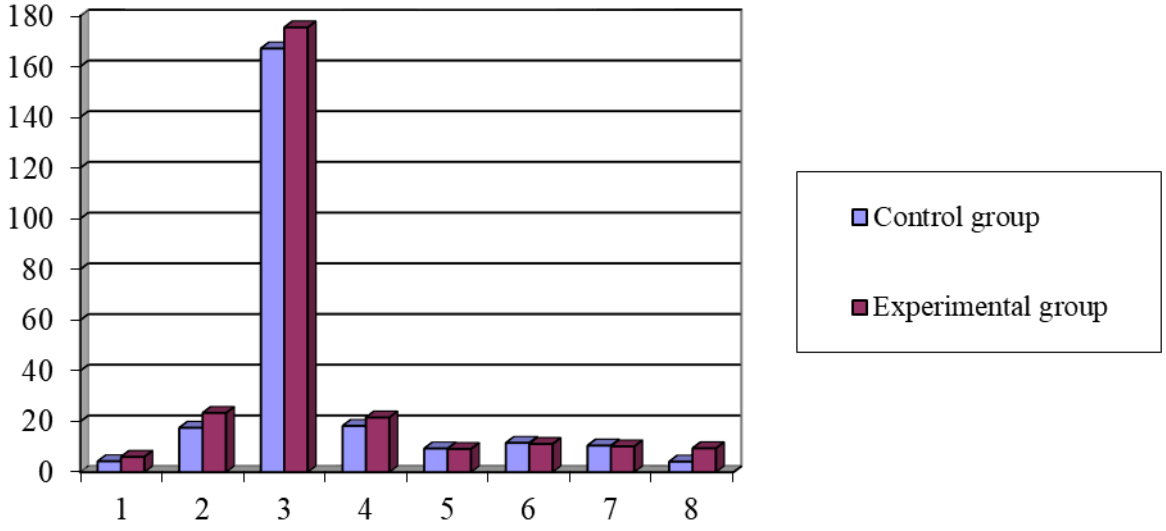


Figure 3.8. **Changes of indexes of physical training of boys in control and experimental groups after the pedagogical experiment**

Notes: 1) hanging pull-up lying, *times*; 2) bent arm hanging, *s*; 3) standing long jump, *cm*; 4) lifting in a sitting position in 30 s, *times;* 5) running 1500 m, min, *s;* 6) shuttle run, 4 x 9 m, *s;* 7) running 60 m, *s*; 8) bent forward from a sitting position, *cm.*

Due to the indexes of shuttle run 4 x 9 m and running 60 m, a tendency to the increasing of results in experimental group was observed, though the received results likely don't differentiate. Such state is caused by the content of classes in experimental groups.

During the study of influence of the experimental methods on functional indexes in central hemodynamics in the state of peace, the changes of functional state of cardiovascular system were revealed (table 3.6).

Table 3.6

Functional abilities of organism of teenagers in control and experimental groups after the pedagogical experiment, $(\overline{X} \pm S\overline{x})$

Index	Sex	Group of pupils		Authenticity of difference, P
		control	experimental	
Systolic arterial tension, *mmHg*	G	116.2±2.18	117.1±2.39	>0.05
	B	115.9±1.89	116.7±2.45	>0.05
Diastolic arterial tension, *mmHg*	G	72.42±1.25	71.73±1.26	>0.05
	B	63.3±0.78	61.4±1.15	>0.05
HR in peace, *bpm*	G	84.23±2.57	83.58±2.03	>0.05
	B	85.04±1.83	84.42±2.46	>0.05
Breath holding on breath in, s	G	33.29±1.07	39.47±1.32	<0.05
	B	35.41±0.83	41.15±0.79	<0.05
Breath holding on breath out, s	G	25.82±0.77	31.19±0.59	<0.05
	B	28.52±0.87	34.05±0.65	<0.05

Indexes of the hemodynamics of teenagers in experimental group that were received at the end of experiment are different from the data of children in control group. Statistically minor (P>0.05) decline of HR occurred for children in experimental group in comparison with the HR data of children in control group. This dimension for boys in control group was 85.04±1.83 bpm and 84.23±2.57 bpm for girls, children in experimental group – accordingly, boys – 88.68±2.28 bpm and 89.34±2.07 bpm for girls.

It is well-known that the heart rate of trained people in a state of peace is less than untrained ones. Researchers remark that children who lead physical inactivity, have their heart rate in a state of peace higher, comparing with children who have high motion activity [10]. So, the decline of HR indexes in a state of peace testifies about a favorable nature of heart adaptation of teenagers to the physical loadings in the conditions of orphan home. Many researchers point out the close dependence of influence of systematic knowledge of physical exercises on the indexes of external breathing.

Scientists admit that lung volume and maximum ventilation likely increase for children and teenagers who do sport, with advancing age, in comparison with children of the same age who don't do any sport [7; 193].

The results analysis of external breathing by the test (breath holding on breath and breath holding on breath out) shows statically significant increase of these indexes at the end of experiment for children of average school age in experimental group as for boys and for girls too ($P<0.05$), in comparison with indexes of children in control group. Children in experimental group held breath on breath – 41.15±0.79 s for boys, that is by 5.74±0.27 s more than boys in control group; and – 39.47±1.32 s for girls, that is by 6.18±0.21 s more than girls in control group.

The increase of these indexes was expected within the process of the experiment since the proposed physical means have a directivity on the improvement of breathing system. So, the proposed means help to improve the functional state of breathing system of teenagers.

The retrial questionnaire poll was conducted after the pedagogical experiment in order to determine a level of interest of average school aged children to the classes of physical exercises. The analysis of characteristics of interest level to the classes of physical exercises after the pedagogical experiment showed that a level of interest the classes of physical exercises of teenagers in experimental group differentiated greatly from an interest to the classes of physical exercises of children in control group (table 3.7).

Table 3.7

Level of interest to the performing of physical exercises for teenagers in control and experimental groups after the pedagogical experiment, %

Index	Sex	Group of children	
		control	experimental
High	G	17.3	40.5
	B	23.8	41.9
Above average	G	25.3	27.2
	B	21.4	32.7
Average	G	45.4	29.7
	B	45.9	23.6
Below average	G	4.8	2.6
	B	3.9	1.8
Low	G	3.5	–
	B	2.7	–
No interest	G	3.7	–
	B	2.3	–

23.8% of boys and 17.3% of girls in control group and accordingly 41.9% of boys and 40.5% of girls in experimental group – interest to the classes of physical exercises is high; 21.4% of boys and 25.3% of girls in control group and accordingly 32.7% of boys and 27.2% of girls in experimental group– interest to the classes of physical is above average; 45.9% of boys and 45.4% of girls in control group and accordingly 23.6% of boys and 29.7% of girls in experimental group – interest to the classes of physical exercises is average; 4.8% of boys and 3.9% of girls in control group and accordingly 1.8% of boys and 2.6% of girls in experimental group – interest to the classes of physical exercises is below average; 2.7% of boys and 3.5% of girls in control group – interest to the classes of physical is low; 2.3% of boys and 3.7% of girls in control group – interest to the classes of physical exercises is absent. We didn't reveal teenagers in experimental group with low interest to the classes of physical exercises or without interest.

Steady interest to physical education causes an aspiration to systematical classes of physical exercises (table. 3.8).

Table 3.8

Number of individual classes of physical exercises of teenagers in control and experimental groups within a week after the pedagogical experiment, %

Number of classes	Sex	Group of pupils	
		control	experimental
3–4 times	G	18.9	52.4
	B	26.5	58.1
1–2 times	G	81.1	47.6
	B	73.5	41.9

Analysis of systematic character of physical exercises classes by teenagers within a week after the pedagogical experiment showed that children in experimental group had a tendency to the increase of classes' number. 58.1% of boys and 18.9% of girls in experimental group – do physical exercises 3-4 times a week and 41.9% of boys and 47.6% of girls – do physical exercises 1-2 times a week. Contrary situation is observed during the analysis of systematic character of physical exercises by teenagers in control group within a week, only 26.5% of boys and 18.9% of girls in control group – do physical exercises 3–4 times a week and 73.5% of boys and 81.1% of girls – do physical exercises 1-2 times a week.

GENERAL CONCLUSIONS

1. The analysis of scientific sources presented a cause to state that a development of motion activity of teenagers is one of the most priority way of increasing the effectiveness of physical education in general educational establishments. Motion activity is a natural biological need that is determined by a number of movements that a human do in the process of vital activity. Amount of movements within a certain period of time defines a usual (household activity, hygienic procedures) and specially organized (therapeutic and sport activity, active rest) motion activity.

During the last decades, quite a lot of researches were conducted and they proved the role and importance of motion activity for a human organism, established the correlation of motion activity and physical state of pupils, developed the criterions of standard setting of physical loading, determined daily and weekly dimension of motion activity for separate groups of population. However, a large amount of local studies that are often not united by a single final aim, led to the fact that conclusions and recommendations sometimes have a controversial nature. As a rule, developed recommendations are based on the optimization of pupils' activity. The problems of organizational-methodic provision of motion activity of teenagers in general educational establishments are still left without sufficient attention of authors.

2. The study results testify that a structure of daily motion activity of teenagers consists of a basic regime (8.31-8.58 hrs – girls, 8.42-8.55 hrs – boys), sedentary (6.27-6.49 hrs – girls, 6.29-5.3 hrs – boys), low (6.17-6.58 hrs – girls, 6.37-7.22 hrs – boys), average (2.32-2.52 hrs – girls, 2.47-2.57 hrs – boys) and high (0.33-0.4 hrs – girls, 0.36-0.47 hrs – boys). Specially organized motion activity that corresponds to a high level of activity, includes different forms of classes of physical exercises, movement on foot to school and back, strolls. Everyday two-hour dimension of motion activity that would ensure a physiological need of organism in a physical loading is recommended for pupils. In practice of general educational establishments, the specially organized motion activity of teenagers is only 0.33-0.44 hrs that is by 65-70% lower than a hygienic standard.

Indexes of daily motion activity of pupils 11-15 years are within 31.1-33.49 points. This index for boys is by 0.61-5.75% higher than for girls. The results analysis of questionnaire poll testified minor changes of a dynamics of the index of motion activity of teenagers in different aged groups. Index of daily

motion activity of girls increases till 12 years, and then it starts to decline gradually. The highest level of motion activity of boys is revealed at the age of 13-14 years, after that a decline of results is observed.

3. Low level of motion activity of teenagers is caused by a range of factors, first of all a decline of interest and motivation to physical culture. Only 9.8-19.5% of girls and 23.2-31.7% of boys have a high level of interest to motion activity. With advancing age, a tendency of interest decline to systematic classes of physical exercises is observed. Only 14.6-22.3% of girls and 17.3-31.2% of boys do physical exercises 3-4 times during a week. This confirms a fact that the majority of pupils limit their motion activity by compulsory lessons of physical education.

Traditions of physical education at school, a current resource base, an effectiveness of out-of-class sports-mass work, a level of professional skills of teachers of physical education, teaching workers, a school administration have an important impact on the dimension and content of motion activity.

Low motion activity causes a decline of level of physical training for girls and boys of average school age. It is established that due to the indexes of strength, speed, endurance, agility and flexibility, accordingly to the requirements of school curriculum, in general pupils have primary and average levels of competence. The tendency of activity tension of separate functional indexes of an organism of teenagers was traced.

4. Basing on the analysis results of scientific sources, own experimental researches, a work practice of general educational establishments and considering the positions of a systemic approach as a methodological basis of the study, a model of creation the motion activity of teenagers was developed and a value-motivational directivity to different by a structure performing and level of physical exercises loading is a basis of this model. Developing this model, all components of academic process were considered due to the keeping of a target, tasks, functions, principles, methods and means of activities.

The main pedagogical conditions were defined and they ensure an effective and resulting creation in out-of-class activities of physical activity of teenagers in general educational establishments, exactly: creation of favorable educational environment, provision of complex nature of therapeutic and sports-mass classes, composite and methodical provision of creation a motion activity, interdisciplinary integration of academic subjects, modernization (including new) kinds of motion activity, orientation on proper standards of physical loading.

5. Model realization of creation the motion activity of teenagers is performed with a help of development and introduction the personal-oriented directivity of physical loading (general developed, recreational-therapeutic, correctional and sportive).

General developed directivity of motion activity expected a system of extracurricular classes of physical exercises, directed on versatile organism development of pupils. The performing of school curriculum content, development of leading and lagging physical qualities, increasing of defense forces and organism opposition to unfavorable factors of the environment were expected. Such work organization allowed expanding a level of motion activity, giving an impulse to health improvement, health conserving motivation by the means of physical culture.

Motion activity of recreational-therapeutic directivity was based on a use of physical exercises, games, entertainment, also natural and hygienic factors for active leisure, changes of activities, recreation of own strength, improvement of psychic and physical abilities, health recovery and improvement. The content of classes was directed on the concernment of pupils by physical exercises, creation of optimistic mood, expansion of world outlook of children through the creation of notions about healthy lifestyle, physical culture and sport, creation of steady motivation on the preserving and improvement of health, formation of knowledge about healthy lifestyle.

Motion activity of correction directivity ensured a preventive maintenance and correction of posture disturbance of pupils. Skills to keep correctly a body were formed for that, the exercises lying on a back, side and chest, on a bench, exercises for a balance with load on a head were performed. Correction directivity of motion activity promoted a creation of hygienic skills, methods of use the therapeutic-seasoned and correction means with optimal number of loading within the process of their performing.

Motion activity of sportive directivity expected a training of sportsmen and was provided firstly by the activities of children-youth sports schools.

– 6. Formative pedagogical experiment revealed a high effectiveness of developed organizational-methodical provision of motion activity development of teenagers in experimental group that is confirmed by such statements:

– possible ($P<0.001$) increasing of high level of motion activity and index of daily motion activity of teenagers that correspond to aged hygienic standards;

– authentic ($P<0.05$-0.001) increasing of the development level of strength, endurance, flexibility, rapid-strength qualities. Due to the indexes of

agility and speed, a tendancy of schoolchildren in experimental group to the increasing of results is observed, though the received data don't diffrerentiate probably;

– work optimization of cardiorespiratory system of teenagers' organism;

– increasing of interest and motivation of pupils to physical culture, systematic individual classes of physical exercises;

– increasing the number of pupils who do physical exercises individually three-four times a week (52.4% of girls, 58.1% of bys).

Conducted research doesn't solve all the questions of a definite problem. Statements of the formation specification of rational therapeutic programs for individual classes of physical exercises depending on a motivation to the activities and level of physical and functional organism abilities of pupils need a further study.

APPENDIX

Appendix A

METHODS OF DETERMINATION OF THE DAILY MOTION ACTIVITY

The methods of time-study, developed by scientists of Framingham State University, were used to determine the daily motion activity for children and teenagers and it is based on a recording of human activities during a day. It presents a chance to get complete information about the duration of a certain kind of activities and recreation, about the alternation of physical loading of different intensity, about the total durance of various kinds of activities and the dimension of energy consumption. Such a range of opportunities gives a reason to qualify the methods of time-study as objective, accurate, informative.

The following levels of motion activity of teenagers are distinguished:

– basic level (BL) – sleep, rest lying;

– sedentary level (SL) – ride in transport, reading, drawing, watching TV programs, table and computer games, nutrition;

– low level (LL) – personal hygiene, lessons at school (except PE and craft), going on foot;

– average level (AL) – homework, stroll, morning gymnastics, active games, breaks at school;

– high level (HL) – classes of physical exercises during specially organized lessons, intensive games, running, sledding, cycling, skiing, riding a scooter, rollerblading, etc.

To determine an amount of time, having spent on each kind of motion activity, the daily time-study of kinds of human activities were conducted: time periods, that were spent on each kind in such sequence as they alternate, were fixed, (watch: Registration card of physical activity). Registration card of motion activity of a child can be in a free form. The main requirement is a precise fixing of time consuming on different kinds of activity of pupils.

Having compared the received data with the middle aged indexes of daily motion activity and energy consumption, it is possible to make conclusions about the accordance with standards. However, if the classes of physical exercises are conducted only 2 times a week, then the other special classes of physical exercises with high level of motion activity are absent; consequently it can cause its shortage.

REGISTRATION CARD OF PHYSICAL ACTIVITY

First Name _____ Surname _____

Day of the week_____ Date _____

School _____ Form _____

Time of activity start	Description of activity	Time of activity performing	Level of motion activity
7.00	Get up, wash, and make a bed.	25 min	LL
7.25	Take things for the class	10 min	AL
7.35	Breakfast	20 min	SL
7.55	Get dressed	10 min	LL
8.05	Way to school	20 min	LL
8.25	Preparation for lessons	5 min	LL
8.30	Lessons attendance (breaks)	3 hrs 50 min	LL, SL, HL
13.10	Way to the place of residence communication with friends	30 min	AL
14.40	Change clothes, get ready for lunch	20 min	LL
15.00	Lunch	30 min	SL
15.30	Read, watch TV, listen to music, etc.	30 min	SL
16.00	Talk on the phone	10 min	LL
16.10	Get ready to go out	20 min	LL
16.30	Go for a walk, etc.	1 hr 30 min	HL
18.00	Come home, prepare for lessons	2 hrs 30 min	LL
20.30	Watch TV, read	1 hr 10 min	SL
21.40	Dinner	20 min	SL
22.00	Watch TV, read, etc.	1 hr 10 min	SL
23.10	Hygienic procedures	10 min	SL
23.20-7.00	Sleep	7 hrs 40 min	BL

Having multiplied an amount of hours that were spent on each kind of activities, by a weighting coefficient (table 1), we get an amount of points that corresponds to the index of motion activity (IMA) on each level. The amount of indexes of IMA on all levels corresponds to a daily index of motion activity.

Table 1

Weighting coefficient of motion index activity

Level of motion activity	Oxygen consumption, l / min	Weighting coefficient	Kcal /min. -1
Basic	0.25	1.0	1.25
Sedentary	0.28	1.1	1.4
Low	0.41	1.5	2.05
Average	0.60	2.4	3
High	1.25	5.0	6.25

Appendix B

METHODS OF MEASURING THE PHYSICAL DEVELOPMENT OF TEENAGERS

Evaluation of physical development of teenagers was conducted by the results of a measurement of anthropometric indexes. A height meter was used to measure a length of the body. The pupil stood on a platform with a straight back to a scale, touching by the back of head, shoulder blade, buttocks and heels to it. Knees were unbent, heels were adjoined to each other, and head was fixed in the way that the external angles of eyes and auditory canal were on one horizontal line. The pupil drew breath in and held breath at the moment of measurement of a body length. Height measurements were carried out with accuracy to millimeter.

Weighing machine was used to determine body weight. Being studied pupil stood in the platform centre of weighing machine. Weighing was carried out with accuracy to 100 gr.

Measuring of circumferences of body parts was carried out in a standard position, in horizontal flatness. Centimeter strip was put on body parts in the way that a zero division was ahead, within sight, and the other tip – above a zero identifier and marked numeral division. Strip tightly but without indentation in skin, adjusted to the body parts that were measured. Circumference of thorax– the strip went behind under bottom corners of shoulder blades, at the front – on the level of nips. Circumference of thorax was measured in three states: deep breath, deep breath out and state of peace.

On the basis of the results of length and body weight measurement, calculations of physical development indexes were carried out.

1. Weight and height Ketle index:

$$\frac{\text{Body weight } (gr)}{\text{Body length } (cm)} \ gr./cm.$$

Evaluation of physical development level was conducted by table 1.

Table 1

Evaluation of physical development level by the Ketle index

The Ketle index		Level of physical development
10-14 years	15-18 years	
≤220.0	≤3.25.0	Low
220.1-265.0	325.1-350.0	Below the average
265.1-315.0	350.1-375.0	Average
315.1-360.0	375.1-400.0	Above the average
≥360	≥400	High

Appendix C

METHODS OF DETERMINATION THE PHYSICAL TRAINING OF PUPILS

Physical training was being determined by the results of testing the strength, speed, agility, endurance, flexibility. Level of strength was determined by the results of pull-up on a crossbar, bent arm hanging, lifting in a sitting position for 30 s, standing long jump; speed – by the results of running 60 m; agility – by the flexibility – by the results of forward torso bend from a sitting position.

Hanging pull-up on a crossbar. The participant hung on to the crossbar and bending arms he pulled up to such position that his chin was above the crossbar. Then he straightened arms completely, going down in hanging lying. The exercise was repeated several times depending on the participant's strength.

Bent arm hanging was performed on a crossbar. The participant hung on to the crossbar by the bending arms that his chin was above the crossbar. The results were determined in seconds, when a participant kept a position of bent arm hanging.

Lifting in a sitting position for 30 s. The participant of testing got a starting position lying on a back, legs bent in knees at right angles, the distance between feet – 30 cm, fingers close above a head. The partner held feet in such way that the heels touched a support. After an order, the participant started to do an exercise. The exercise was repeated for 30 s. The results were determined by an amount of lifts from a lying position in a sitting position for 30 s.

Standing long jump was performed on running track of a stadium. The test result was a distance of jump in centimeters. Running 60 m was held on a stadium due to the rules of competitions. Four participants took part in the race. The results were determined with accuracy to tenth of a second. Running 1000 m was held on a stadium. The results were fixed in minutes and seconds.

Shuttle run 4x9 m was performed on running track, limited by two parallel lines (distance between them – 9 m). The participant got a position of high starting front of a starting line. After a team he ran 9 m to another line, overstepped it and ran to the starting line. Having reached it, he overstepped it again, turned and ran back. The result was determined by time (in seconds with accuracy to tenth of a second) of performing of all cycles.

Bend forward from a sitting position was performed on a floor. The participant in bare feet sat in such way that heels touched a line AB. Distance between heels – 20-30 cm, feet were in a vertical to a floor position. Arms were lying on a floor between knees, hands were down. Partner held hands at a level of knees to avoid their bending. Due to the order, the participant of testing bent down forward fluently not bending legs and tried to reach by hands as far as possible. The position of maximum bend should be kept for 2 s, fixing fingers on a marking. The testing result was a mark on the perpendicular line (in reference to line AB), which the participant reached by the tips of fingers to, in centimeters.

Appendix D

EVALUATION METHODS OF FUNCTIONAL ABILITIES OF TEENAGERS' ORGANISM

To evaluate functional abilities of pupils such indexes were measured: holding breath on breath in and breath out, systolic and diastolic arterial tension, heart rate.

Arterial tension was determined with the help of membranous measurer of general use, in a sitting position. The participant unbarred his left hand, and he was put a cuff on a shoulder. Knob of phonendoscope was set on the artery in the area of ulnar cavity. By the rhythmical push of a pressure switch, a pressure was created higher in a cuff as it had been expected. The smooth decline of pressure in a compressed cuff was provided by a slow turn of regulator in a counterclockwise direction. In the moment of detection of first tone, systolic arterial tension was fixed, during the disappearance – diastolic one. The measurement was conducted twice with interval as much as 5 min. The average result was fixed in mmHg.

Duration of holding breath was determined with different tests:

1. Stange's test – a maximal holding breath on breath in. Being studied person in a sitting position takes several deep breathing cycles and after breath in, he closes his mouth, clenches wings of nose by big index finger. Due to the stopwatch, time is fixed from the moment of respiratory standstill till its restoration.

2. Gench's test – a holding breath on breath out. Being studied person after several cycles takes a full breath in, closes mouth and clenches nose by fingers. Time of holding breath is registered by a stopwatch.

Heart rate (HR) was measured with a help of palpation. 2-4 fingers were put on palmar surface of forearm of left hand near a thumb and pressed tightly for 30 s with proper recalculation in 1 min.

Appendix E

QUESTIONNAIRE FOR PUPILS

Institution of Physical Culture and Sports of Youth conducts a study directed on the learning of physical training of schoolchildren. So we look to you with a request to answer the questions of the offered questionnaire.

Due to the conditions of the questionnaire, after each question several variants of possible answers are proposed. Before you answer, read all proposed answers carefully then choose one which coincides with your thought. If any of proposed answers doesn't satisfy you, then write your own.

Data that will be received in the course of the questionnaire, aren't publicized and will be used just in generalized form, it is not compulsory to write name.

Thank you for help in the study!

1. Interest to physical culture:

high; above the average; average; below the average; low; no interest; attitude is negative.

2. Motives of attendance the PE lessons (several variants of answers are admitted):

desire to improve physical training (develop strength, endurance, agility, flexibility, speed);

desire to improve health;

desire to learn the techniques of physical exercises;

interest to the person of teacher;

aspiration to get god marks;

aspiration to avoid troubles because of absences from the classes;

habit to conscientious performing of any duties in general;

other motives (note)_____

3. Did you do sports in sport sections before? If your answer is yes, which section? (Write)

yes; no.

_____

4. Would you like to do sports in a sport section?

yes; no. **If yes, which one? (Write)**

_____

5. If you do physical culture or sports nowadays, how often?

Every day or 5–6 times a week;
3-4 times a week;
1-2 times a week;
less than once a week;
almost don't do it.

6. If you don't do physical exercises, what is the reason?

boring;
no free time;
more interesting lessons;
not see any benefit of classes;
because of a lack of sportive base and buildings in the area of residence;
family circumstances don't allow;
health state doesn't allow;
no sections of those kinds of sport I would like to do;
get exhausted with the studying;
because of will strength absence, though I want to do it;
my friends don't do sports – me too;
now it is not prestigious to do sports;
other reasons (note)_____

7. What indexes of your physical state do you always concern about?

body weight;
musculature development;
proportions of body building;
speed development;
flexibility development;
agility development;
endurance development;
strength development;
other (note)_____

8. How do you evaluate your health?

perfect health; good health; satisfying health; bad health; very bad health; it is difficult to answer.

9. Evaluate level of your physical training

very high; high; average; low; very low; it is difficult to answer.

10. As a rule, what do you do in your free time? (several variants of answers are admitted)

take part in a social work;
read belles lettres;
just have a rest at home in the bosom of family;
relax with friends;
listen to music;
play musical instruments;
participate in amateur arts groups;
appeal to art (painting, sculpture);
do arts and crafts;
visit concerts, theatres;
do gardening;
do sports, tourism;
visit sportive spectacles;
visit discos;
appeal to technics;
appeal to driving;
do collections;
watch TV, videorecorder;
listen to the radio;
read newspapers, magazines;
visit museums, exhibitions;
visit cafes, bars, restaurants;
visit friends, relatives;
play gambling games;
other interests (note)_____

11. How much time a day do you spend on your favourite kind of rest (you note)?

by one hour; from 1 to 2 hours; from 3 to 4 hurs; from 5 to 6 hours; more than 6 hours.

12. Can you say that you lead healthy lifestyle?

yes; yes rather than no; no rather than yes; it is difficult to answer.

13. Where do you get more knowledge about physical culture?

meeting with famous sportsmen;
meetings with specialists in the area of physical culture;

sports-mass events in the area of studying;
PE teacher;
coach of sport kinds;
television;
radio;
newspapers;
special sport literature (books, brochures);
other (note) _____

14. Do you have any sportive equipment in your family (several variants of answers are admitted)

no sportive equipment;
skis, skates;
dumbbells, crossbar, weights;
training equipment;
bike;
rackets for tennis, badminton;
tourism equipment;
other sportive equipment (note) _____

Write, please, abut yourself:

Age_____, height_____, weight_____, sports achieve ranking_____, school_____.

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S C I E N T I F I C E D I T I O N

IVAN VASKAN
MARYNA KOZHOKAR

THE ORGANIZATIONAL BASICS AND METHODICAL PROVISION OF MOTION ACTIVITY DEVELOPMENT OF TEENAGERS IN THE EXTRACURRICULAR ACTIVITY

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