

ADAPTATION AND PATTERNS OF ITS EFFECTS ON THE CONTINUITY OF A HEALTHY WAY OF LIFE OF SENIOR PUPIL AND FIRST-YEAR STUDENTS

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Annotation. Reviewed and analyzed the literature on adaptation of youth. The results of the monitoring of the impact of factors on the process of adapting a healthy lifestyle succession of senior and first-year students. The experiment involved 298 high school students and 296 first-year students. It is established that the category of "adaptation" is the most important educational component of a healthy lifestyle. This category is effectively influence the process of succession healthy living and active sports activity pupils and students. The strategic goal of secondary and higher education should be to create an environment that promotes the physical and moral improvement of young people, promoting a healthy lifestyle. It is proved that adjustment disorder is expressed in the deterioration of health, physical development, bio-energy physical activity of young people.

Keywords: adaptation, senior pupil, students, health, healthy, lifestyle, physical, development, continuity.

Introduction

Adaptation, as naturally determined factor, is closely connected with human organism's functional system as well as with the process of ensuring of pupils' and students' physical education's succession.

Adaptation factor – is an indicator of human organism's adapting to varying environmental factors. With it, specialists mark out genotype and phenotype adaptation. Genotype adaptation is a process of adapting to environmental conditions by means of hereditary changes and natural selection. Phenotype adaptation is an adapting process, which develops in every individual during all life as a response to different environmental factors.

P.K. Anokhin, in his works on theory of functional systems, based on results of researches of A.A. Ukhtomskiy about dominant, as a system, which combines nervous centers, executive organs, oriented on realization of human behavioral responses [1]. F.Z. Meyerson, studying the problem of adaptation, marked out a statement about interconnection of function and genetic system of organism's differentiated cells that permitted him to coordinate idea of dominant and functional system with regularities of long-term adaption's development [6]. Functional system, which is created as a response to any physical load, includes three links: afferent, central-regulatory and effector [1, 2, 3, 6, 8, 11]. Scientifically grounded educational process results in increasing of functional abilities of organs and organism's functional abilities, at the account of perfection of the whole complex of mechanisms, which are responsible for adaptation.

Researches of Ukrainian scientists show that adaptation level, acquired as a result of five-years training for endurance, can be lost within 2-3 months of period without trainings [4, 5, 7, 9, 10, 11]. Already in first weeks after stoppage of training one can notice symptoms of de-adaptation of functional system, which determine endurance level: during 6-24 days the quantity of functioning capillaries, which are located around muscular filament, reduces by 14-25% [6]; after 12 days passive rest – indicators of maximal cardiac output reduce by 11%, and maximal oxygen consumption – by 7% [8].

The work has been fulfilled as per plan of scientific & research works of Donbass state pedagogic university.

Purpose, tasks of the work, material and methods

The purpose of the research is analysis and experimental verification of adaptation factor's influence on the process of succession of senior pupils' and first year students' healthy life style.

The tasks of the work:

- to systemize the data of literature sources, devoted to problem of adaptation and succession of senior pupils' and first year students' healthy life style;
- to develop questionnaires for studying of senior pupils' and first year students' attitude to healthy life style;
- to carry out testing of health and physical conditions of senior pupils and first year students.

The methods of the research:

- pedagogical methods (experiment, questioning, testing), analysis, synthesis, generalization;
- methods of mathematical statistics.

Two comprehensive schools in Slaviansk, Lugansk national agrarian university and Donbass state pedagogical university were the base of researches. 298 senior pupils and 296 first year students took part in experimental research.

Results of the research

Analysis of special literature showed that adaptation is rather important indicators of life activity, formation of whose level is executed by the whole complex of organism's physiological system changes (hormones of pituitary gland and adrenals, state of nervous, cardio-vascular, respiratory and other systems) under influence of stress-factors (physical or mental work, changes of atmospheric pressure, temperature and so on). With it new adapting behavior of an individual, ensuring the most favorable organism's adapting to these factors, is formed.

Physical status of an individual is determined by combination of conservative typological features (inherited and genetically determined), which determine the limits of adaptation of systemic training influence on human organism. For persons, who belong to different typological groups, one and the same features can be either conservative or variable. Effective formation of long-term adaptation can not be ensured without consideration of pheno-genetic characteristics, which are in foundation of division of people by constitutional types. Regularities of adaptation's development are very closely intertwined with regularities of functional systems' formation in view of P.K. Anokhin's opinion [1].

Individual structural-functional peculiarities of personality's organism envisage possibility of adaptation's realization in the process of physical training, but not previously formed adaptation. It ensures using of such adapting responses, which are of vital importance and, thus, regulate saving, controlled by training process consumption of energetic and structural reserves of organism, as well as orientation on formation of functional specialized system. It is necessary, that in cell and organs, which form such system, there were structural changes and characteristics, increasing its physiological capacity, where mutuality appears between function and structure – genetic system. Under influence of adaptation, on certain stage of training process there happens re-distribution of cell fund between organism's systems. This phenomenon says about limit of adapting abilities of an individual's organism. Adaptation with domination of one systems results in exhaustion of other.

With adaptation of senior pupils and first year students to high psycho-physiological load, capacity of skeleton muscles, heart, lungs increases, but activity of liver, kidneys and some other organs reduces.

With it, it is necessary to consider that stress loads, connected with intensive work and metabolism processes are most important for liver, cardio-vascular and central nervous systems. In the process of changing of physical means' character, load's dynamics spectrum of adapting responses also changes: old responses are replaced by new ones. It happens through process of adaptation, in the course of which earlier formed "traces" are erased. Stress syndrome is an initial link of any new adaptation, owing to intensive consumption of energy resources, which is able to cause the loss of earlier accumulated functional mechanisms. Therefore, stress not only ensures transmission of resources from inactive systems into active, but simultaneously it catalyzing factor in formation of one structural means and elimination of other. Adaptation characterizes procedural phenomena, in which such categories take place: origin, formation, maturity and transformation.

Origin – is the first stage of urgent adaptation, which is characterized by mobilization of hyper-functions as insufficiently perfect functional "surge", which permits to maintain working level of systems up to appearing of long-term adaptation. It is ensured by maximal minute volume of blood circulation and breathing, availability of lactic acid in the quantity close to critical level.

Formation – is the second stage; it is a transition from operative adaptation to long-term one (cumulative); it is characterized by activation of protein's synthesis in system's cells, which are responsible for specialized adaptation with constant reducing of stress-syndrome, where, mainly, stable adaptation develops. This stage can be delayed with excessive muscular or psychic load.

Maturity – the third stage- is formation of cumulative adaptation and is characterized by presence of positive tracing processes after load, by absence of stress-syndrome and perfect adapting to certain influences and situations.

Transformation – the forth stage- is a stage of "wearing out", functional overstrain; it is not compulsory and develops with excessive intensity of adaptation, instead of optimal. After long period of hyper- function in nervous centers, endocrine system and executive organs there progresses complex of "local wearing out", which is expressed as reduction of protein's synthesis, disorders in metabolism, partial death of cells and etc.

Adaptation factor confidently characterizes the level of whole organism's adaptation, while its components are indicators of healthy life style and health.

Adaptation potential (AP), which is a complex indicator of health, physical condition and constructed on the base of regressive interrelations of heart beats frequency, systolic and diastolic BP, age, body mass and body height, is calculated by formula, offered by A. Bayevskiy et al. [2]:

$$AP = 0,011 \bullet HBF_n + 0,014 \bullet BPs + 0,008 \bullet BPd + 0,014 \bullet age + 0,009 \bullet body\ mass - 0,009 \bullet height - 0,27.$$

Where HBF – heart beats' frequency in rest; BPs – systolic blood pressure (mm.p.merc. col.); BPd – diastolic blood pressure (mm.p.merc. col.); age (years); body mass (kg); body height (cm).

Adaptation potential is evaluated in conventional units (conv.un.):

AP less than 2.61 conv.un. is evaluated as 8 points (satisfactory adaptation);

AP from 2.61 to 3.09 conv.un. equals to 6 points (functional strain);

AP from 3.10 to 3.49 conv.un. equals to 3 points (unsatisfactory adaptation);

AP more than 3.49 conv.un. is evaluated as 1 point (adaptation breakdown). In our researches satisfactory adaptation was found at 39.2% of boys-first year students and at 57.3% of boys-senior pupils; concerning the rest (60.8% and 42.4%) we observed adaptation breakdown, that in itself is an alerting factor.

Summary

1. Structural reserve and functional capacity of dominating systems are irreversibly increased, while the same of inhibited systems – irreversibly reduced. It shall be considered in educational process, especially when working with

senior pupils and junior students. Excessive by strain adaptation to very specialized influences during long period of time will result in negative effects:

- possibility of quick functional exhaustion of specialized systems, which dominate in adapting recreation;
- reduction of energetic and functional reserve of other systems, which participate in adapting responses and, as a rule, remain determined.

2. At first stages of educational process transition from one-side adaptation and one-side development to complex adaptation and harmonious development of personality implies mastering of new, more promising forms of adaptation. Physical trainings shall be based on combined adaptation, which is formed by complex of different influences. Development of specialized functions is ensured by wide range of physical exercises with optimal manifestations of organism's adapting responses.

3. Variability of complex approach is possible both with parallel, sequential and with successive structure of building of physical load. It implies:

- simultaneous development of several functions in one training (lesson, pair), school semester, semester, academic year;
- repeated development of function through optimal intervals of time, which do not permit for the achieved level of motion abilities to reduce; effective formation of long-term adaptation cannot be provided without consideration of phenol-genetic characteristics, which are in the base of pupils' and students' division into constitutional and typological groups.

The prospects of further researches will be oriented on studying of peculiarities of age adaptation and on pedagogic influence, stipulating purposeful monitoring of educational measures on different stages of ontogenesis.

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