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THE CONCEPT OF PHYSICAL REHABILITATION IN DIFFUNCTIONS OF SOMATIC SYSTEMS IN YOUNG SPORTSMENTS IN THE PROCESS OF MULTI-YEAR PREPARATION

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Relevance. At the present stage of the development of the society, sport is one of the few spheres of human activity that contributes to the growth of the national prestige of the country, strengthens the international reputation of the state and reflects the real level of consistency of its social policy, which is revealed in the success of the competitive activity of athletes representing the interests of the state in the world sports arena [26, 30]. Effective implementation of complex tasks to optimize the organizational and methodological work with athletes is impossible without taking into account the individual characteristics of their physical health, ensuring effective competitive activity [2, 7, 21].

Experts of the theory of sports consider the athlete's health as a professionally significant value, which is the basis of his reliability and prospects at the stages of the process of long-term preparation [16, 23, 25]. What determined the priority of the health-saving direction of the sports movement [14, 15, 17], developed by specialists in a complex, based on the array and medical knowledge, the analysis of which leads to the justified use of drug prevention, treatment and rehabilitation in the training of athletes with pathology of various body systems [3, 10, 22]. However, at the present stage, the efforts of sports physicians are not sufficient for the effective implementation of its strategic tasks, which is confirmed by scientific materials pointing to the correlation increase in the indicators of somatic morbidity of athletes during their many years of improvement [7, 9, 17], which is especially pronounced in critical periods of ontogenesis [16, 20, 22, 24, 29].

The above, together with the realities of the anti-doping policy and the economic trends of the modern market of pharmacological preparations, was a prerequisite for shifting the emphasis in the processes of prevention and rehabilitation of diseases (injuries) in sportsmen to the use of physical means and methods, as an etiologically sound, financially accessible and authorized alternative to the means of medicaments correction of pathological deviations in the health status of athletes and their consequences [15, 17, 19].

Consideration of the available scientific data accumulated in the use of physical rehabilitation tools and methods in the training of athletes has shown that at present this area is in the active development and development stage and the research prospects are related to the health protection of the athletes of the nearest and remote Sport reserves of higher achievements [5, 8, 28]. However, the analysis of the problem under study indicates that scientific knowledge is not systematized in the understanding of the integrity of the PR as a continuous process of preventive, rehabilitation, health-forming and health-saving activities harmoniously integrated into the training activities of young athletes [14, 15, 17, 19] With the modern methodology of the theory of medical rehabilitation and the **GHO** strategy, according to which it is a prenosological (preventive) level of the rehabilitation process, focused on increasing "Quantity" of human health (functional and structural reserves of the body) [23]. As a result, the scope of the methodological conditions for the implementation of the PR process in the practice of children's and youth sports and backup sports has a number of open questions concerning the unidirectional nature of research in the aspects of nosology of somatic diseases and the levels of implementation of the PR process [15, 17, 19]; Inadequate elaboration of the basic principles of the integrated application of PR means and methods in rehabilitation programs for young athletes, with differentiation in nosol-

ogy, gender, age and professional characteristics [5, 11, 18, 28]; Lack of continuity of the activities of the PR process at the stage of sports training, which is a consequence of the lack of connection between the proposed programs and the process of training young athletes in a specific sport [6, 8, 11]; Insufficient number of PR programs of preventive orientation; The lack of clear technologies for integrating the structural components of PR programs into the training process of young athletes [24, 25, 29].

Thus, the systematization of theoretical prerequisites for the inconsistency of medical epidemiological, ontogenetic and methodological conditions for the implementation of a continuous PR process in the practice of training young athletes with dysfunctions of somatic systems and their previous states requires the formation of theoretical foundations of the concept of the PR, the rationale for its organizational, methodological and integration forms in The process of long-term training of reserve athletes to improve his health-shaping orientation. The development of this concept has significant theoretical, practical and social significance for the preservation, maintenance and strengthening of the health of young athletes in the process of the first three stages of long-term preparation and prolongation of their sports longevity.

The purpose of the research is to scientifically and methodically substantiate and develop the concept of physical rehabilitation in the dysfunctions of the body's somatic systems in athletes during the first three stages of long-term preparation to enhance their health forming orientation.

The solution of the research tasks included the development of the theoretical and methodological foundations and organizational forms of the concept of the PR of young athletes with dysfunctions of the body's somatic systems in the stages of initial and basic training, which included structural components: a comprehensive assessment of the health status of those involved; The development of specialized programs for preventive and rehabilitative purposes; The technology of their integration into the training process, as well as the experimental evaluation of its effectiveness.

Methods of research. The groups of methods thet were used: general scientific (analysis and systematization of scientific and methodological literature and information resources of the Internet, content analysis of theoretical and methodological works, data of normative and reporting documentation on the incidence of athletes); System analysis; Comparison and comparison; Sociological (examination of the quality of medical care); Pedagogical (pedagogical observation, pedagogical experiment); Medical control of the functional condition of athletes (stage, current, operational); Express level estimates (physical health, functional status and reserve capabilities of the body of young athletes, external respiration function); Mathematical statistics.

Results of the study and their discussion. Systematization of scientific knowledge on the use of physical aids and methods in the practice of long-term training of athletes with pathologies of various nosological groups was carried out by us to justify the expediency, determine the direction of the PR process and the principles of implementing its organizational forms at the stages of professional development of the specified contingent. The consensus of experts is established regarding the above: an increase in the number of negative trends in the state of somatic health of young athletes due to a dissonance between the functional reserves of a growing organism and the factors of training activity [10,12,20]; Increase in the prevalence of pathological abnormalities in the activity of the leading somatic systems of the organism, mainly acute forms [3,7,16]; Aggravation of severity diagnosed dysfunctions and severity of clinical symptoms of their manifestation, in conditions of increasing the main parameters of the training process specific to the chosen sport [4, 19, 29]; Limiting influence of hidden and chronic pathologies on the effectiveness of the process of professional development of young athletes [5, 18, 25].

The above mentioned, predetermined the priority of the preventive rehabilitation component of the stages of long-term preparation, with a regular departure from the medicament means and the shift of emphasis to the sphere of health formation of athletes in the process of correcting pre- and pathological abnormalities of various nosological groups by using physical means and methods, which has an experimental evidence base [4, 5, 11, 12, 14, 28]. It is established that

at the moment the practical implementation of scientific experience on the differentiated use of complex means and methods of the PR in the process of training young athletes with dysfunctions of somatic systems and their prenosological forms is hampered by the insolvency of a number of conditions (methodological, organizational, pedagogical, medical epidemiological and ontogenetic character), the aggregate of which leads to the actual absence of technology for integrating the structural components of the PR process into program preparation of the contingent, and outlines the objectives to be achieved.

System analysis of the objective conditions of the medical and epidemiological nature was based on the results of the medical examination of athletes – pupils of sports clubs (SC), DH-SORCYS them. S.N. Bubki, SCYSOR and Youth Sports in 38 sports. Medical examinations were carried out in the conditions of a medical-physical education dispensary and training bases, over a three-year period of time. The data of the program-normative and reporting documentation on the incidence of athletes (form of the Ministry of Health of Ukraine No. 52 – "Healthy", form No. 20) was studied; dispensary reports of doctors-curators on sports. The studies were carried out in two directions: the dynamics of the morbidity rates of the dispensary contingent (general, newly diagnosed and somatic systems) during this time interval was studied. A total of 14,417 athletes of different gender, specialization, qualifications, ages 8-17 were examined; the structure of somatic pathology was examined in terms of uncorrected factors of its development and progression (determinant – sex, age, sports specialization, preparation stage), according to the data of the medical examination of 5437 athletes. It was analyzed the correlation of the clinical forms of the revealed pathology, the dynamics; the results of the analysis of the medical and epidemiological conditions indicated the following: a high specific gravity of deviations in the health status of reserve athletes – 58,8% (3,220 people); presence of primary pathology of various nosological groups – 5,12% (278 athletes); the increase in the incidence rate for the three-year follow-up period (total – 4,7%, primary – 0,82%); the prevalence of functional abnormalities in the activity of the leading somatic systems in the structure of general morbidity: SSS, respiratory, digestive, urinary, reproductive (diseases of internal organs systems) – 36,9% (1,181 athletes) and pathology of ODA – 23,06% (743). Differences in the degree of functional stability of the somatic systems of the organism of young athletes (1181 people) to the combination of exogenous and endogenous factors influencing the structure of somatic pathology were established (46,6% of the dysfunction of the SSS, 16,26% in the respiratory system, 14,82 in the digestive system %, Urinary – 10,58%, reproductive system, 10,08%). This made it possible to identify "weak links in adaptation", to justify the expediency of developing programs at the post-nosological level of the PR process, to specify the direction of rehabilitation effects, to initiate the study of ontogenetic and pedagogical conditions for the development and practical implementation of the concept of the PR.

A number of negative trends in the state of health of young athletes during the first three stages of long-term preparation have been identified: an intensive increase in the indicators of somatic pathology (from – 17,70% in the group of athletes aged 8-11 years, to – 45,39% 17 years); prevalence of acute forms of dysfunctions in the general structure of somatic pathology (75,11%) and extensive dynamics of their specific gravity index (from 78,95% at the stage of initial training (mainly inflammatory etiology) to 73,00% at the stage of specialized basic training (mainly of functional origin)); transition of acute conditions into chronic form – at the stage of preliminary basic training. With regard to chronic forms of dysfunctions, intensive dynamics of their specific gravity were noted (from 21,05% in GNP, to – 27,0% in GSAP); differences in etiology (at the stage of initial training – mainly perinatal genesis, at the stage of specialized basic training – acquired) and the nature of the flow in conditions of training activity (out of 294 athletes (24,89%) in 8,98% – exacerbations of diseases, 3,22% – total suspension from sports); negative dynamics (increase) of indicators in the dispensary group (total number of athletes – 18,03%, cases of exacerbation of pathological conditions – 18,87%, cases of exacerbation, which led to the termination of sports – by 26,32%). The dominant importance of the specificity of training activity in the development of dysfunctions of somatic systems among

athletes of each of the groups of sports is confirmed by differences in the structure of somatic pathology. The totality of the presented data justified the expediency of developing the rehabilitation components of the conception of the PR and the differentiated correction of the strategy of the process for each of them, and initiated its own studies on the in-depth study of the endogenous factors of the development of somatic diseases in athletes of the chosen specialization at each of the initial stages of long-term development (the diagnostic component of the concept - level-by-level screening of somatic health).

For in-depth study of endogenous factors, the presence of which created a threat to the somatic health of young athletes (subject to the organization of training activities without taking into account their individual characteristics) and the effectiveness of the process of their preparation was limited, a study was conducted. A total of 260 athletes from 9 to 17 years old GHO specialized in sports games (football (boys, boys - 162 people, volleyball (girls, girls) - 98 people) and trained in the first and third stages of long-term training. The periods: 9-11 years of initial training, 12-14 years of preliminary basic training, 15-17 years of specialized basic training, which corresponds to the training program for the training of athletes of these specializations.

For the consideration of endogenous factors (functions constituting the health indicator), within the framework of uncorrectable determinants (sex, age, stage of preparation), we proposed a level-by-level screening of the current state of health of athletes - a set of consistently used diagnostic methods, which included five steps: I-stage – in-depth medical examination (UMA); II stage – rapid assessment of the level of physical health (method GL Apanasenko), III stage – assessment of the reserve capabilities of the functions that make up the indicator of physical health; IV-th stage – rapid assessment of the functional state and reserve capabilities of the body (the technique "D & K-test", SA Dushanina, VP Karlenko); V-th stage – computer testing of the function of external respiration (on the apparatus "Cardio +" (channel "Spiro")). This kind of layer-by-layer "screening" allowed: 1) to determine the function that limits the growth of reserves of the body's basic functions *(endogenous corrected risk factors)*; 2) to substantiate the differentiated orientation of the choice of physical means and methods for filling the PR programs and the form of their integration into the training process of young athletes.

It was established that the endogenous factors limiting the preparation process of the examined patients should include: chronic forms of somatic pathology – 117 (45.0%) of the examined (of them: 19 (7,31%) cases – in the stage of exacerbation); individual physical health indicators are not sufficient for effective training activity – 195 (75,0%) athletes (including: 94 (36,15%) people at risk (GR), 101 (38,85%) people – group "sick" (GB)); Parameters (functions) that make up the individual health indicator (with differentiated differences in gender, age and preparation stage). The main endogenous risk factors at all stages of the training are:

- the **GH** athletes have low reserve capabilities of functions: external respiration (except for the athletes of the groups of preliminary basic training), the muscular system (except for junior athletes), physical development (most often in athletes – lack of body weight);

- for athletes of GB (at all stages of training) – limited reserves of the function of the **SSS** (except for the athletes of the groups of preliminary basic training), the system of external respiration and the muscular system (except for junior athletes), as well as the functions of physical development (more often, body weight deficiency);

- the insufficiency of energy supply systems for muscular activity (GR – 5,38%, GB – 60,40%, predominantly athletes) and insolvency of its regulatory mechanisms (GR 8,51% (athletes), GB 36.63% (athletes));

- violations of the mechanisms of bronchial patency (of various origins), manifested mainly in the obstructive variant (GR-18,64%, GB – 49,38% of the examined). The generalization of the obtained data, marked the complex of violations of endogenous mechanisms of development and progression of somatic diseases in young athletes, differentiated the direction and conditions for the implementation of the preventive and postnosological levels of the PR process in the first and third stages of preparation.

Systematization of the aggregate theoretical assumptions and the results of our studies on the

objective conditions (methodological, pedagogical, organizational, medical – epidemiological and ontogenetic nature) allowed forming a theoretical and methodological foundations PR concept dysfunction somatic body systems and their prenosological forms of sportsmen at stages of the first stage of a multi-year Formation, namely:

- *Conceptual approaches* to the formation of the foundations of the concept of the PR in conditions of dynamic escudo interaction with the intrinsic structural components constituting healthkeeping long-term preparation process: system structurally and functional rehabilitation and prophylactic;

- *Conceptual bases:* the purpose, tasks, principles of organization and implementation of two interrelated pedagogical processes: physical rehabilitation and long-term sports training;

- organizational foundations of the concept: *four component structure of the organization; three vector structure dynamic implementation* of the concept in conditions of initial stages of long-term preparation process (horizontal vector (rehabilitative components) – implementation mechanism PR process; vertical vector (diagnostic component) – interaction mechanism own structural components; time vector (integration technology) – the mechanism of interaction own components With the structural components of the process of training athletes, at each of the initial stages); Own organizational forms for each of the vectors.

- Methodical foundations of the concept: special principles – which are the derivative of the quintessence of the principles of fundamental theories. Allowed to justify: a unified scheme for building the PR process and the technology of integrating its structural components into the process of training themed athletes; an unified scheme for justifying a strategy for the preventive direction of the PR process, criteria and algorithm for selecting young athletes to participate in it; Scheme for the development of the structure of unified programs of the PR and the choice of its integration forms (time vector – tactics of the PR process).

The proposed technology is strategically focused on etiological reasonable, functional correction of endogenous mechanisms of pre- and abnormalities in the activity of somatic major systems of the body of young athletes, taking into account uncorrectable risk factors, using an integrated approach. Its distinctive feature was a flexible differentiated correction of the tactics of the PR process, based on the data of the five stages of screening the functional state of participants in the process. This is reflected in the practical implementation of specialized programs PR five types (ten species) and allowed to experimentally confirm the effectiveness of the possibility of complex use in the training of athletes with undiagnosed somatic dysfunction prenozologic systems and forms of these conditions means and methods of risk factors and correctional preventologic orientation. When an innovative approach to the dynamic redistribution of emphasis the process of implementation of the program in the direction PR preventologic actions by the progressive change (transformation) of funds intended use specially-improving orientation, independent forms of training, creative approach on the part of participants in the PR process.

The evaluation of the results of implementation of the proposed technology was carried out in accordance with the groups of performance criteria. When studying the immediate result, in 100% of cases (regardless of gender and the stage of sporting development) in GH and GB athletes a significant ($p<0,05$) increase in individual health indicators; Differentiated differences in the degree of receptivity of young athletes and the rehabilitation effects (most in GB) in terms of gender, age and stage of development (a pronounced rehabilitation effect in the SSBP athletes (the increase in the proportion of athletes with health above the "safe" level – by 38,89%, with a decrease in the number of athletes in the risk group – by 10%)); Significant changes in the structure of a group of athletes when assessing the indicator under study: a decrease in the proportion of athletes with inadequate indicators of physical health for effective training activity – by 32,70% ($p<0,05$); An increase in the number of athletes with "medium" and "high" characteristics (by 6,16% and 26,54%, respectively) ($p<0,05$); reliable increase in the indices of metabolic bases of muscular activity ($p<0,05$) and improvement of its regulatory mechanisms ($p <0,05$); an increase in the proportion of athletes with a satisfactory degree of adaptation – by 14,23%; the state of tension of mech-

anisms of adaptation (physiological character) – by (1,54%); reduction of diagnostic cases: acute forms of diseases – by 7,31% ($p<0,05$), exacerbation of chronic diseases by 2,69% ($p<0,05$); a decrease in the total number of young athletes with diagnosed chronic forms of somatic pathology by 10,26% ($p<0,05$). In the group of athletes with chronic pathology (117 people): improvement of the functional state of the systems involved in the chronic process (77,78% – 91 athletes) ($p<0,05$); stabilization of the chronic process (11,97% – 14 athletes) ($p<0,05$); an increase in the proportion of healthy athletes by 17,31% ($p<0,05$), which is in favor of the effectiveness of the implementation of the technology, which was 52,33%, according to the changes in the structure of a group of athletes in the medical assessment of their functional status.

The evaluation of the result of the technology during the year from the moment of introduction testified in favor of the effectiveness of using its methodological foundations in the daily training activity of athletes, while improving the level of practical skills of independent application of the means and methods of the PR, as confirmed by the positive dynamics during the year of the following criteria: primary pathology – a decrease of 4,62% (in the absence of cases of complaints about the pathology of SSS, GIT and reproductive Systems); The number of cases of exacerbation of chronic forms of somatic pathology (which is not a contraindication to sports) – a decrease of 7,31% (in the absence of cases of appeals); The number of cases of withdrawal from dispensary registration of athletes with chronic forms of somatic pathology is 32,38%.

Conclusions: The research allowed to develop a number of new scientific provisions and to obtain conclusions that together solve an important scientific problem – the development of theoretical and methodological foundations for the use of means and methods of physical rehabilitation in the process of the stages of long-term training of young athletes for the effective solution of problems on the justified correction of the totality of endogenous and exogenous factors that underlie deviations in the state of their somatic health. In the proposed work a new scientific direction has been formed, which provides wide disclosure of the possibilities of physical rehabilitation in raising the level of somatic health of young athletes and optimizing the health forming component of the process of long-term training of athletes. Rethinking the essence of physical rehabilitation in the process of the first or third stages of long-term training of athletes has made it possible to form the basic positions of their integrated interaction for improving the health-shaping orientation of training influences.

The obtained data reveal the possibilities and prospects of using the theoretical and methodological foundations of the concept in the practice of training sportsmen of the reserve of sport of higher achievements, for further improvement of its health forming component, as well as in raising the level of theoretical preparedness of specialists in the fields of sports medicine and physical rehabilitation.

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