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PHYSICAL EDUCATION OF STUDENTS WITH SPECIAL MEDICAL NEEDS

Ukrainian experts, analyzing the state of physical education of students, argue that most of them are not accustomed to taking care of their own health. They rely on medical services and disregard efficient and inexpensive means of keeping fit – physical exercise.

It is well known that physical exercises contribute to the disease prevention, increase in life expectancy, and organization of proper rest; they help fight bad habits, create conditions for testing individual's strengths, and provide an optimal amount of physical activity.

At the same time, experts continue to stress the deficit of motor activity of students, inadequate physical fitness and physical health, which attests to the absence of pedagogical conditions for the realization of the approach to physical education in universities taking into account the needs and motivation of students.

The issue of physical education of students with special medical needs is quite significant for higher educational establishments. As is known, Lugansk Taras Shevchenko National University provides opportunities for obtaining quality education at all of the recognized qualification levels. But certain percentage of students has special medical needs and, therefore, should exercise in special medical groups. The main challenge in working with such students is the organization of physical education classes so as to improve their health and overall condition and to curb or, at least, restrain the progress of the disease through exercise and physical activity. Higher education is a lengthy process, but if universities give their students the opportunity not only to get a diploma, but also to improve their health, they will

be seen as schools taking care of each student's health, which will enhance their prestige and image.

Many scholars work in the area of the physical education of students with special medical needs. One of the main principles of physical education is the principle that puts health in the center of attention. The essence of this principle is the pursuit of health benefits during physical exercises (Vasil'kov O., Dubogai A., Matveyev L., Platonov V., Krutsevych T., Shiyan B. et al.) Methodological basis of the programs of physical education of the students with special medical needs was established in the general theory and methodology of physical education and sport (Bulatova M., Bulych E., Mizyerov M., Mahlovanyy A., Lynets. M., Matveyev L. et al.). Among scholarly works devoted to the physical education of students with special medical needs, growing importance is given to the study of means and methods of improving the physical functions of the body and dosing exercises (Ivanochko O., Zelenyuk O., Mizerov M., Kurdybaylo S., Chohovadze A. et al.).

Health is an integral qualitative characteristic of the individual and society that combines social, spiritual, mental, and physical components and gives a person a sense of inner harmony, well-being, and overall life satisfaction. Therefore, the most important task of the teacher is to take care of the health of students because it is the key to their cheerfulness, vitality, and adequate mental and physical development.

Practice shows that universities often lag behind the needs of time. Many physical education instructors lack knowledge about the specifics of the organization and methods of work in special medical needs groups, show passivity and inertia in this important work, and mistake it for an imposed workload.

The process of physical education of medically frail students is very complex. It is with deep understanding of this process, that the opportunities available in schools can be efficiently and correctly used to succeed with such students. Nowadays, it is particularly important to resume the forms and methods of this work.

The main criterion for the inclusion of a student into a special medical needs group is the diagnosis with an obligatory consideration for the degree of disability. It must be borne in mind that a number of conditions characterized by a local

dysfunction are accompanied by systemic disturbances, weakening, to some extent, the entire functioning. This said, in order for the instructor to ensure the most effective physical education of students with special medical needs, he/she should be clearly aware of the tasks that must be solved: health improvement, harmonious physical development, and physical training. To fulfill this most important for medically frail students' requirement, it is necessary to provide each of them with a quantitatively and qualitatively adequate physical activity regime.

When working with special medical needs group, it is reasonable to follow the conventional structure of physical education classes. Prohibition or baseless restriction of certain exercises seriously damages the prospects of health improvement. It should be noted that the exercises to which the body is poorly adapted are the most valuable (provided that they are done carefully and strictly graduated). Any exercise can be excluded only for a limited period of time, after which it must be resumed gradually. Not the elimination, but the graduation of exercises on the basis of the degree of disability and adaptive capabilities is one of the most important tasks of physical education of students with special medical needs.

Maximizing health improvement in the training process requires the differentiation of teaching methods (depending on the degree of disability and adaptive capabilities). It is important to bear in mind that students with special medical needs require not less, but even more physical load than their healthy peers; moreover, they require qualitatively different physical activity.

Let us detail the forms of physical education classes for students with special medical needs. Physical therapy is one of the main forms of physical exercises for students with special medical needs. This is, on the one hand, determined by the extent of the therapeutic effect of exercise on different functional systems of the body, such as cardiovascular, respiratory, musculoskeletal, nervous, and endocrine systems. On the other hand, exercises train and restore impaired body functions. It is necessary, therefore, to identify the main principles that reflect the specific nature of physical therapy:

1) a clear differentiation of the goals and objectives of physical therapy based on the analysis of its opportunities in ensuring the restoration of muscle strength and coordination, prevention and elimination of contractures, development of autonomy in moving around, development of manipulative actions skills, normalization of metabolism, breathing, setting the foundations of controlled urination and defecation, and acquisition of new professional skills.

2) interactive use of different methods in a complex of physical therapy;

3) differentiation of methods, using physical exercises, sports and games, action-oriented exercises;

4) the inclusion of exercises into the complex should be decided on the basis of the clinical syndrome of motor disorders, type of muscle tone disorder; and

5) the inclusion of games and competitions is also effective.

Gymnastics should be part of students' daily routine. It is a good practice to have 3 – 4 sessions, 15 – 30 minutes each, during the day. In order to increase the impact of exercises on the functional development of the body and the level of fitness, it is recommended to use various training systems, gear and sport equipment at the individual trainings (weights, stretch bands, expanders, footballs, body bars, block training systems, and others), which will ease the task of graduating exercises and creating programs of local influence on certain muscle groups and body systems.

Physical therapy, in the form of daily sessions of 15-30 min each, should be part of weekly exercise load.

Walks and short-distance tourism are forms of physical education that do not require long preparation and the use of complex equipment and facilities. Walks are included in daily exercise load at all stages of rehabilitation. Their duration depends on the ambient temperature, physical fitness of students, opportunities to walk after classes. Short-distance tourism can be organized by a group of students as well as independently. Usually it takes a day. The inclusion of short-distance tourism in students' daily exercise load unites active perception of the environment with a graduated physical activity, helps relax, improves the functional state of the major

systems of the body, and increases the level of physical fitness of students with special medical needs.

Physical therapy is sometimes conducted in the form of rhythmic gymnastics. Exercises of rhythmic gymnastics are easily graduated, directed at the action, easy to learn and to do. They include series of different types of running, jumping, skip jumping, and dance elements performed at a fast pace. Furthermore, rhythmic gymnastics exercises are performed to music and, while remaining essentially gymnastic exercises, they are dancelike, form a sense of rhythm, musicality, and ability to coordinate movements with music. Rhythmic gymnastics primarily impacts cardiovascular and respiratory systems. For this reason, complexes of corrective rhythmic gymnastics were recommended to correct faults in posture in visually impaired students. In conducting a remedial rhythmic gymnastics, we adhered to the following guidelines. A complex of remedial rhythmic gymnastics included 4 parts: low amplitude exercises to prepare the body for active work; large amplitude exercises; exercises to strengthen the muscles of the front and back of the torso, oblique muscles, the muscles in the upper shoulder girdle, etc.; jumping exercises. Each session concluded with relaxation exercises [3, p. 25 – 28].

During physical education classes, as well as remedial gymnastics classes, we used some of the yoga poses. It is known that the asanas can be used to treat a wide variety of diseases. By changing the external position of the body, one can purposefully affect the visceral functions. We used 23 asanas that improve posture: fetal, angle, right angle, bridge, child's, kind cat, angry cat, gentle cat, diamond, mountain, divine, snake, cricket, curling, stork, head-to-knee, boomerang, candlestick, plow, swan, fish, camel, and throne positions. Recommendations on the application of such non-traditional exercises of hatha yoga as neck-and-shoulder stand were taken into account. These exercises are believed to improve the eyeballs blood supply and, as the results of some studies have shown, do not cause pathological changes in the heart if applied for a short period of time.

Swimming is a very effective form of the organization of classes for students with special medical needs. For those who cannot swim, we propose the following

exercises: learning to float; swimming gradually increasing distances, diving (if not contraindicated) with inspiratory/expiratory hold; getting something from the bottom of the pool at its shallow end; and breathing management exercises. For those who can swim: improvement of the swimming technique; building endurance, better breathing by progressively increasing the distance; breath-holding diving; and aquatic games.

Every student can determine his/her medical status using functional tests as part of independent creative tasks, namely:

a) physical load test (20 squats or 60 skip jumps for 30 sec, 15-second hard high-knee running in place, jogging in place for 3 minutes (180 steps/min), etc.). Test pulse acceleration and recovery;

b) breath-holding tests (having inhaled, the subject holds breathe as long as possible (fingers holding his/her nose). A stopwatch measures the hold time (Stange's test). In healthy, but trained individuals, the hold time varies within 40 – 60 seconds in men and 30-40 seconds in women);

c) test of the body's sense of positioning (Romberg test);

d) Harvard step test (before performing the Harvard step test, the subject rests for 5 minutes. Physical load is given by climbing up and down a 45-cm gym bench every 2 seconds (120 steps a minute). Each cycle consists of 4 steps: one – one foot up onto the bench; two – both feet on the bench; three – one foot down on the floor; four – both feet down on the floor. The duration of the test is 3 minutes. If the subject gets tired and cannot keep up the pace, the test is stopped, and the time is recorded before reducing the pace.

After the test, the student sits down on a chair. The first minute, a test participant rests calmly. Then, for the first 30 seconds of the 2nd, 3rd, and 4th minutes of recovery, a heart rate at the radial artery should be tested.

Index of Harvard step test (IHST) is calculated using the following formula:

$$\text{IHST} = T \cdot 100 / (F1 + F2 + F3) \cdot 2,$$

Where t – time (c); F1, F2, F3 – 30-second value of the heart rate taken at 2nd, 3rd, and 4th minutes of recovery.

Rating of index while performing Harvard step test

Rating	IHST
Unsatisfactory	55
Below Average	56 – 64
Average	65 – 79
Good	80 – 89
Excellent	90

Special attention should be paid to the choice of teaching methods depending on the nature of the disease of students with special medical needs [4, p. 57 – 61].

For example, in students with cardiovascular disorders, correct and healthy breathing while performing physical exercises reduces the heart rate and improves the functions of the cardiovascular system. Gradual improvement of the pulse reaction to physical activity gives grounds to gradually increase the load. Physical exercises should be done with the simultaneous control of the changes in heart rate and blood pressure. During the initial warm up, it should not exceed 120 –130 beats per minute. Blood pressure should vary as follows: systolic pressure increases and diastolic reduces or remains the same. Blood pressure should be measured immediately after the exercise during the first minute of cooling down. Cyclic physical exercises at a slow and medium pace; alternating moderate load with full relaxation of large muscle groups should be widely used (walking, running, etc.). Physical exercises are easily combined with breathing as well. They contribute to the peripheral circulation of blood, which normalizes and even facilitates cardiac performance if combined with healthy breathing [1, p. 52 – 53].

Physical load in students with respiratory diseases (chronic bronchitis with emphysema in the lungs) should increase the mobility of the chest. Special attention should be paid to the long and full exhalation, with contraction of the muscles (muscles of the torso, neck, chest, etc.) Full strained inhalation is not recommended. Physical load in functional diseases of the nervous system and metabolism should include various physical exercises involving large muscle groups. They are performed at a medium pace and should be combined with breathing exercises.

Training sessions should include exercises with the burden and resistance. Exercises with medicine ball, dumbbells, various balls, walking and jogging at a slow pace are used extensively. Apparatus gymnastic and jumps should be applied carefully.

Musculoskeletal disorders require individual approach on the basis of motor abilities of students. In addition to combined developing exercises, local exercises should be widely used to strengthen muscles that provide compensatory function and improve movement. Chronic diseases of joints, limitation of their movability, residual effects of poliomyelitis, and other diseases of the CNS that cause movement disorder call for integrated training sets. These sets (daily treatment for a month, then 2 – 3 months of physical exercises 4 times a week) significantly improve movements in the patients with past chronic diseases (polio, arthritis, etc.).

Consideration of the above leads to the following conclusions:

1. Any disease restricts student's healthy development and, thus, causes his/her retardation or deviation from the norm. Rehabilitation, therefore, should be of correctional and therapeutic nature.
2. Transfer from a high school to university changes students' leading activity and physical load, which put more pressure on the main systems of the body compared to the school period. Therefore, it is necessary to determine physical load during training sessions individually, alternating it with adequate rest.
3. The organization of education and rehabilitation of students with health challenges requires a certain regime of physical therapy classes and other methods of physical rehabilitation, which, in the weekly cycle, must alternate sequentially with ordinary physical education classes. The organization of such classes should proceed, first of all, from the medical diagnosis and prognosis, as well as from the contraindications to athletic participation in various disorders.

We anticipate that further development in this area will study and implement new physical therapy techniques for students with special medical needs.

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Шинкарьов С. І. Фізичне виховання студентів спеціальних медичних груп

У цій статті визначено значення та специфіку проведення занять із фізичного виховання в спеціальних медичних групах. Описано види занять із фізичного виховання в спеціальних медичних групах, окреслено функціональні проби стану здоров'я студентів, подано рекомендації щодо застосування фізичного навантаження при різних захворюваннях. Сформульовано основні завдання та принципи проведення оздоровчої роботи із студентами, які мають відхилення в здоров'ї та неспроможні повноцінно займатися фізичним вихованням.

Ключові слова: фізичне виховання, спеціальна медична група, лікувальна фізична культура.

Шинкарёв С. И. Физическое воспитание студентов специальных медицинских групп

В этой статье определяется значение и специфика проведения занятий по физическому воспитанию в специальных медицинских группах. Описаны виды занятий по физическому воспитанию в специальных медицинских группах, определены функциональные пробы состояния здоровья студентов, описаны рекомендации по применению физической нагрузки при различных заболеваниях. Сформулированы основные задачи и принципы проведения оздоровительной работы со студентами, имеющими отклонения в здоровье и не имеющие возможности полноценно заниматься физическим воспитанием.

Ключевые слова: физическое воспитание, специальная медицинская группа, лечебная физическая культура.

Shinkaryov S. I. Physical Education of Students with Special Medical Needs

The article defines the importance and specifics of the physical education of students with special medical needs. Types of physical education classes for such students are described, as well as functional tests to establish their medical status. Recommendations for adjusting physical exercise load according to a variety of needs are provided. The main objectives and principles of health promotion efforts among students who, due to health reasons, cannot fully participate in physical education, are articulated.

Key words: physical education, group of students with special medical needs, physical therapy.

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