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METHODOLOGICAL PHENOMENON OF RELAXATION AND TENSION IN THE MOTOR REHABILITATION OF CHILDREN

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Annotation. The phenomenon of relaxation and tension in motor rehabilitation is investigated. The study involved 59 preschool children with different movement disorders (including children cerebral palsy). It was analysed 18 publications on the issue. Found that both relaxation and tension can be methodically used to improve the efficiency of motor rehabilitation of children by means of physical education and physical therapy. In general methodological relaxation should always be preceded by tension, but depending on the predominant muscle tone (hypertension or hypotension) requires specific methodological transformation of this approach. In addition, not all of the known technology of the muscles can be successfully applied to work with children of preschool age with spastic forms of cerebral palsy.

Keywords: relaxation, tension, tone, muscles, rehabilitation, children cerebral palsy.

Introduction

The analysis of modern systems of children motor rehabilitation with disorders of the musculoskeletal system by means of physical education and physical therapy are shown insufficiency of the scientific and methodological validity of this approach. In different systems the authors proposed different approaches to restore muscular system enough local but fragmented. This led to the fact that in Ukraine there is still no single program for correctional physical education preschoolers with cerebral palsy and other movement disorders have.

There was a need for a fundamental development of scientific and methodological framework of the system, which should be translated into the appropriate state program ordered by the Ministry of Education and Science, Youth and Sport.

Purpose, tasks of the paper, material and methods

Purpose of an article – consideration methodologically the most current dual pair in motor rehabilitation of children by means of physical education – a total mind-body phenomena, meditation and concentration (in relation to muscle – relaxation and stress) for more effective use in motor rehabilitation of children by means of physical education.

Methods of research. Were used both the theoretical (analysis of references to the problem) and practical (the series of experiments based on the pre-school institutions in Ukraine and Russia) methods.

Organization of research. The study involved 27 preschool children with cerebral motor impairment (including cerebral palsy) and 32 children of preschool age with lumbar disorders.

Results

The importance of relaxation (relaxation) is described in a number of domestic and foreign research. Interesting methodological vector can be seen in the main provisions of osteopathy, in particular, in the cranio-sacral techniques. In Yu.V. Chikurov works [8] is discussed about prior sense of release, ie release when working with the patient's body. This, of course, is a physical, myofascial release, ie normalization of muscle and fascial fibers. There is a natural assumption that the physical restriction, - areas with limited mobility tissue - can form the corresponding neurovascular restriction, then - mental and, at the highest and small level - informational and energy. They are called "clips", "blocks", "muscular armor", "iron shutters". Taking into account psychosomatic person's nature the suggest idea seems to be quite correct. Such approach may be called the principle of generating a restriction when the primary, even the most insignificant, physical restriction generates a restriction of certain neuro-vascular, then - mental and, in the end, reduces the level and flow rate of the vital energy in the body (prana, chi, energy orgone, bioenergy). The assumption of such causal effect relationship between all kinds of units make it possible for reverse supposition to the positive effect of this mechanism. Pushing through certain postures and exercises physical restriction, you can automatically get rid of and from other types of restriction, going out, in the end, to increase the energy level and the rate of its power in the body of the child with disabilities.

Confirmation of this approach is in the works of Wilhelm Reich on psychosomatics [10, 11], where he suggests that the emergence of "muscular armor" (Body armor) directly provokes secondary mental block (Character armor). "Under the Reich system, each personal position corresponds physical, physically expressed in muscle stiffness or, in other words, in the formation of muscular armor ... He came to the conclusion that in essence the physical and mental armor is the same (emphasis added. – N.N.): "Elements of the typical shell should now be regarded as functionally identical to corresponding elements of the muscle [hypotension]. The concept of "functional identity" (Emphasis added. – N.N.), which I would have to introduce means that in the mechanism of the mind personal position and the state of human muscles have the same function: they can substitute for each other and are able to interfere with one another. Essentially, they can not be separated from each other. Their functions are identical (Reich, 1973, p.270-271) ... Shell

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may lie on the “surface” or stay in the “depth”, it can be “soft, like a sponge”, or “solid as a rock” ... (Reich, 1973, p. 145) ...

For the destruction of the armor is used three tools: 1) the accumulation of energy in the body through deep breathing; 2) a direct effect on chronic muscle tension with the aim of relaxation (pressure, tingling, etc.); 3) maintain support of a constant state of cooperation with a patient, open discussion with him every case of resistance or emotional tension. These three tools Reich used working on each of the seven segments of the tubular ... " [7, c.228-229]. Each such segment includes certain muscles and organs that have related expressive function. These segments are at eye level, neck, mouth, chest, diaphragm, abdomen and pelvis and are seven horizontal circles placed at a right angle to the spine. They are repeat location of the seven chakras known in Hatha Yoga and Tantra. It should be understood that, ideally, all of the seven chakras in man healthy, free and harmonious should be as open. Identified above segments of muscular armor, on the contrary, are a kind of valve preventing the opening of energy channels and full-blooded energy movement. Hence comes the fundamental postulate of corrective physical education of children with disorders of the musculoskeletal system about primary unlock need of all the available segments of muscle and thus the mental armor. In my work with children, we achieve this that always begin physical training from lying-horizontalizing positions: lying on back, on side, on stomach, turning from back on stomach, in a position on all fours on the ground (low, medium, and high, front and rear), a crawl. In gravitational terms, this allows you immediately reduce the effects of gravity on the bones and muscles of the child, and, hence, reduce the anti-gravitational support tonic response. Muscle tone in these positions is reduced – the muscles relax, which also impacts positively on the removal of mental stress.

Further should be considered the main moments of F. Mathias Alexander Technique [9], designed to enhance the conscious attitude to go their own ways. "Alexander believed that a necessary condition for a free and efficient movement of the spine is elongated a spine (single out myself. – N.N). He did not mean to stretch the use of force, namely the extension of the soft top. Alexander school students work mainly as follows: loosen the neck to the head to move freely back and forth, back and lengthened and expanded ... The balance between the head and the spine provides the elimination of physical stress, improves posture and muscle coordination. On the contrary, all that prevents the elimination of this balance, spoils posture causes stress and poor coordination" [7, p. 238]. Alexander developed a method for learning complex movement, which was based on a balanced connection between the head and the spine.

The described Alexander technique impressed us the fundamental thesis that the free and plastic movement is pre-loaded spine – we also adhere to the views of the advantage at the beginning of the physical training of meditation (relaxation) phase with respect to concentrative (hard) part of it. In our opinion, in the methodical plan relaxation should always be preceded by stress, but not vice versa. When you exercise in the lying-horizontalizing positions, soft traction of spine (the natural extension) happen automatically. This is a natural extension of the spine in certain cases it may be more enhanced with special packings and devices - this area has been called the "treatment situation". The plan can also rationalize the gravitational force and the weight of his own body and limbs, to traction effect was achieved faster and more accurate (autotraction by gravity). This can also include active stretching techniques spine specialist - in particular, stretching both hands behind his head lying on the baby's back, stretching dosed the child with gymnastic ladder or two, taking him by the arms and legs.

Certain interest in researched problem belong to a system of improving sensory awareness, established in the United States by Charlotte Selver and Charles Brooks. "With the acquisition of the ability to touch-consciousness people have the opportunity again to make contact with their own bodies and their own feelings. Only children tend to support this contact constantly, but, growing up, they gradually lose this ability. Loss of self-consciousness begins at a very early age. Parents have a tendency to respond to children, but consistent with their personal preferences and ideas that can improve the functioning of the body of the child ... There is another problem - the problem of making an effort. There are so much parents in the world who force their children literally as possible at an early age to learn to sit, stand, walk, talk, etc., thus boosting their development ... In the end they get the hang of overwork in all that they do [7, c. 242-243].

In the developed system of corrective physical education of children, we use the idea of a touch self-consciousness, which are implemented in our athletic tales. For example, in the lesson " Lie-abed Country" for 30-35 minutes or more wards with disorders of the musculoskeletal system feel all faces prone position, both in terms of gravity, and in the subject-role-playing. Then, following the logic of phylogenetic planning class meets "Happy Zoo", in which children under the stewardship of master teacher creeping variety of motor actions. Again, our wards feel gravity component of the provision involved in crawling muscle groups, as well as appropriate role orientation: the image of a lion, tiger, wolf or bear. Follow him on to the schedule activity “he doesn’t stay on foot, but immovable” is devoted to " sitting" main regime: children feel the gravitational advantage of this new provision to the previous one, involve the sense of bearing capacity of the pelvis and lower extremities, as well as the respective roles played by: " fidget", " Cork-tumbler" etc. In this regard, we propose the introduction of the principle of support-gravity comfort in being able to take in every moment of static or moving the most rational position (position) of the body, in which the balance between the internal muscle force and the gravitational effect will be balanced, ie when there is a situation of stress in any part of the body. This approach is most clearly realized while child’s sleeping. This proactive, preventive methodical method allows to process motor-play activity to avoid muscle clips and form "muscular armor."

It should be noted that the evolutionary principle of the motor rehabilitation of children suffering from cerebral palsy, has long found its expression in the theory and practice of domestic medical physical culture [6]. However, it is spread primarily on the practice of restoring lost function only in children with cerebral palsy and hard spinals, while

for the other wards with relatively mild motor impairment, the application is not received. This applies primarily to the large number of children with “deleted” forms of spinal paresis (cervical, dorsal, lumbar, combined). This includes children with all sorts of violations of posture (scoliosis, stoop, chest hypokyphosis, lumbar hyperlordosis, plano-concave bearing, convex-concave bearing, kyphoscoliosis, etc.). The list of categories of children with locomotor disabilities, for which the evolutionary principle of the classes are not found to date of its application, the children can continue with different types of violations of Iambic (flat feet, hollow foot, horse foot, clubfoot, asymmetrical type of standing, etc.), diffuse muscle hypotonia, mild spastic cerebral paresis etiology, etc. This situation seems to us inappropriate. In our opinion, it is an evolutionary direction of corrective physical education and motor rehabilitation of children with locomotor disabilities, should be fundamental to the theory and practice of adaptive physical education of children with all types of motor disorders, ranging from mild, subtle peripheral spinal paresis and ending with severe forms of cerebral paralysis [4].

Also noteworthy a system of structural integration (rolfing), created by Ida Rolf. Rolfing is concerned mainly with the system of muscles and ligaments, and the method involves the conversion of the body and posture through substantial stretch the muscle fascia and connective tissues that support the muscular system and link directly to the skeleton. "Rolf discovered that psychological injury or even a slight physical damage can lead to subtle, but relatively constant changes in our body. Bone or muscle tissue displacement, thickening of the connective tissue locates and captures the change. Imbalance observed not only in the surrounding areas of personal injury, but also in the more remote locations of the body without any compensation was. For example, if over-protect a sore shoulder, then after a while it can affect the neck, shoulders and hips more» [7, p. 241]. Rolfing is primarily aimed at the integration of different physical biolinks of body – the psychological aspects of this process have not been considered initially by the author.

Rolfing ideas develop today, particularly in the stretch of Nelson and Kokkonen. The authors propose to gradually rotate the levels of these stretch marks on a notional 10-point system. Mild pain is classified 1-3 points, and it goes right at the beginning of the stretching exercises. Middle pain is estimated to be 4-6 points. The high degree of pain is felt before the start of exercise and gradually decreases when the stretch marks - it is estimated at 10.7 points. Researchers have shown that the efficiency of stretching the better the longer the training high level pain. The authors identify four types of stretching exercises: static, proprioceptive, ballistic and dynamic, favoring slow static stretching, where the trainee receives a certain posture and keeps it constant time. Researchers have deduced the optimal duration of stretch spastic muscle fibers - from 5-10 sec in the initial stage of the training process and to 25-30 seconds in the final cycle of training. In this system, stretch marks are also invited cranio-caudal sequence study of muscles in the direction of the head and neck - to the feet. After an experiment with preschool children suffering from cerebral palsy spastic forms showed that pain stretching techniques are often perceived by them with elements of negativism, immediately bring negative sentiment in the class and form a painful jerk rejection as exercise and training of the (specialist). This is one of the most complex conflicts facing the system of corrective physical education of children on the one hand - stretching necessary and the pain the child will occur, forming a negative attitude to everything that is associated with this action. On the other hand, the need to find such instructional techniques that will allow at least to a certain extent, reduce the perception of pain arising children and create a positive attitude of the child to perform this type of exercise.

In our opinion, the work required by stretching spastic muscles in children with spastic paresis forms should be based on the following:

- preceded by stretching muscles thermal treatments on the area of muscle spasm and relaxation massage;
- apply the total gaming method with high plot-role-motivation, the emergence of positive emotions, good endorphin background, which largely compensates for the pain;
- use of technical devices that allow at least partially fix the child (separate his biolink) in the required position for stretching (for example – bench Takorjus, Ugul, etc.);
- usage of the power of passive (forced) method of stretching muscles with an adult teacher (instructor), also on the board, subject-role-background;
- in the high school age can be recommended portion stretching exercises carried out in pairs, which simplifies the problem being solved (and using your body weight partner).

Some prospects are fraught after isometric relaxation, which is achieved as follows: first, the problematic muscle group should be reduced in the isometric mode, ie without moving the limb, without moving in space biolink, for example, the arm (the bones should not change its original position). "... In many exercises for the isometric contraction phase follows a phase of stretching. This is an effective technique relaxes muscles, relieves muscle spasms and has a pronounced analgesic effect " [3, p.10].

Now let’s briefly discuss the phenomena of voltage that can be used in motor rehabilitation of children with musculoskeletal system disabilities. In this respect, noteworthy is the isometric exercises of Dr. Borshchenko [3] offering to stretch the muscles and muscle groups in special ergonomic positions, with little or no movement or movements with small amplitude, eliminating the overload of joints and vertebrae. The isometric contraction of the muscles, as opposed to an isotonic involves muscle tension without its motion without movement of the bones and joints. Some fragments of such exercises are of interest to our study, especially for children with hypotonic muscle manifestations (for example, with lingering lower lumbar paraparesis). It replaced the relaxation to come concentrated

stress, requiring sufficient willpower. This can also be achieved only with a physical game, which provided an interesting fairy story – we can talk about correctional athletic tales. It should be noted that, in general isometric approach with regard to pre-school children, and even with disabilities is inadequate their age features. For this category of children are more natural isotonic exercises with full inertial-ballistic movement of body biolinks. On the one hand, this is due to the presence of the phenomenon kinesophily (kinesthesia hunger) described by M.R. Mogendovich and I.B. Temkin, on the other hand – the dominant story-game form of training that involves a wide variety of movements of limbs in the subject-manipulative actions.

Similar to the methodological approach in the described above system, is gymnastics Hud Zviad Arabuli [1]. The author of this technique also offers it as the predominant type of isometric muscle tension when the joint in a fixed position, and volitional muscle force is gradually increased and maintained.

The essence of it is to learn how simultaneously to reduce antagonist muscles, for example, the flexors and extensors: biceps and triceps shoulder. This approach, according to the author of the system, has a number of methodological advantages:

- muscular system becomes more harmonious, because the development of certain muscle groups balanced development of the other, the mirror opposite;
- in this mode intense increases muscle mass;
- to some extent spared joints;
- these exercises can be done in the immobilized position: lying, on all fours, sitting, standing (which would seem to be especially important for people with disabilities of musculoskeletal system). However, the described method has several drawbacks that reduce its value in relation to the correctional physical education of preschool children with disorders of the musculoskeletal system. These include: relatively high degree of discomfort, even pain during exercise in isometric mode, the need for significant manifestation of will, which in childhood is problematic. The author himself face to face conversation with him acknowledged his method more designed for adults with a high degree of manifestation of will require. Also, in our opinion, such an unnatural approach to the physiology of muscles in his first primary physiological basis of violating the principle of reciprocal innervation of antagonist muscles, which is the base and related to the first level of building movements according to N.I. Bernstein [2]. Its essence is that the voltage at one muscle group (e.g., forearm flexors) antagonist muscles, in this case - the forearm extensor - automatically relax and reduce their contractile activity. This phenomenon is present profound physiological phenomenon, allowing the animal and human body to perform sequential, cyclic plastic limb movements necessary, particularly when moving.

Conducted by ascertaining pedagogical experiments allowed to find another way to stimulate significant muscle tension in children with muscular hypotonia - dosage dramatization of motor-game story. In this case, the role of manifestation simply requires the child to stimulate the reduction of hypotonic muscles over time. For example, playing exercise “Rescuer” (squats, standing up fast), the teacher creates a stimulating drama – our child-hero should have time to save all the animals from the flood in the woods, raising them to a special lift (a role which he himself and performs) to a safe altitude (at gymnastic ladder). With this approach (created the archetypal image of a strong rescue-hero) is extracted from the unconscious child colossal, previously dormant, the energy that can be directed to the contractile stimulation of flaccid paretic muscles.

Studies have also shown that stimulation of the contractility of the muscles can be achieved by the following methodological techniques:

- exercise regime aimed strictly against the force of gravity (bottom-up);
- different weighting in the form of belts and cuffs on the trunk and distal extremities;
- the use of elastic, loose bearing surface when moving;
- using elastic rod against the direction of movement;
- with resistance (impedance) of the teacher or another child;
- various combinations of the above options.

Conclusions.

1. As a psycho-physical meditation, as the corresponding concentration can be effectively used in motor rehabilitation of children with disabilities of musculoskeletal system.

2. In general techniques of meditation (relaxation) should always be preceded by concentration (muscle tension).

3. Regarding pre-school children suffering from spastic forms of cerebral palsy and spinal paralysis - a preferred orientation of the relaxation techniques are seen: the total gravitational relaxation of skeletal and spinal column, traction equipment soft muscle spasm, unlock "muscular armor", increasing the degree of freedom in the joints and muscles and etc.

4. With respect to hypotonic muscle states (atoniko-astatic form of cerebral palsy, spinal muscular hypotonia diffuse origin or flaccid paraparesis lumbar) is more preferably a technique of muscle tension: isometric exercises, gymnastics elements Hudy, methods and design of the dosage dramatization of archetypal images, specific techniques (antigravity, weights, elastic medium, elastics, etc.).

5. In some cases, you can effectively combine phenomena of these two opposing conditions: after isometric tension – to carry out the slow stretching of muscles (post-isometric relaxation).

Prospects for further research. It is provide an appropriate methodological use of psychophysical phenomena teachers of meditation and concentration (of relaxation and stress), as well as private technician muscle recovery functionality of a typological groups of children with specific movement disorders (respectively, hyper or hypotension).

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