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WORKING POSTURE AS A BASIS OF TECHNICAL PREPARATION OF THOSE PRACTICING SPORTIVE TYPES OF GYMNASTICS

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Abstract

Each kind of sport formulates ODA of the young sportsman in correlation with its goals. Sportive types of gymnastics contain characteristic to their type placements, positions, stands and movements, on the basis of which sportive elements are constructed, and the “school of movement” is built. These characteristic positions, the position of the body, formulate the foundation of the school of movement - the working posture. In other words, the entire culture of movement in sportive types of gymnastics is in fact contained in the spine, in its position, in the position of the hip joint and in muscle tone condition/

The article considers the technology aimed at the adaptation of the spine, ligaments and joints, as well as the muscles of the body of acrobats to specific loads, as a factor in preventing specific diseases of the musculoskeletal system.

Key words: working posture; posture distortion; sportive types of gymnastics; special technical preparation

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placements, positions, stands and movements, on the basis of which sportive elements are constructed, and the “school of movement” is built.

These characteristic positions, the position of the body, formulate the foundation of the school of movement - the working posture. In other words, the entire culture of movement in sportive types of gymnastics is in fact contained in the spine, in its position, in the position of the hip joint and in muscle tone condition [1, 2, 3, 13].

Analysis of the performance technique of the modern gymnastic exercises indicates, that the spine of the gymnasts experiences a great compression load. Thus, for example, trampolining gymnasts can achieve jumps seven meters in height; acrobats are forced to use highly original elements, which are often accompanied by the manifestation of maximum flexibility of the spine; and jumpers on the track do complex transitions from a double somersault into a tempo somersault, herewith often with a loss of linear speed.

All of this renders considerable strain on the lumbosacral part of the gymnasts’ spine, which in turn leads to an increased level of illnesses and damage of the spinal system [4, 13, 15, 16, 17]. According to O.S. Vasil’ev, 2010 [2] “sport, as medicine, intervenes in the ontogenesis of the child’s development. And as for “the depth of influence” on the organism of the exerciser, it is equal to clinical medicine”.

Thus, in order to avoid functional violations of the spinal system, high-end sport - is firstly not as much of over-strain, as professional specialization from the beginning, the goals of which is the adaptation of leading functional systems (in our case the spinal system) to specific strains of the given sport.

Therefore, one of the main aims of initial training is the formation of the “working posture”, which is characterized by the tight fixation of body parts with optimal flexibility at the hip joints and an increase of the lumbosacral angle. Practically, however, this aim is upheld by far not all of the coaches.

The objective of our study is the formulation of the working posture of the sportsmen and sportswomen who specialize in the sportive types of gymnastics.

Methods of study: somatoscopy, pedagogical experiment, testing

In the study participated 80 children between the ages of six and eight, who practice various types of gymnastics (artistic gymnastics, trampoline jumps, acrobatics) at the beginner level. In the process of the experiment two groups were formed: experimental (n=40) and control (n=40).

Results of Study. Despite the fact that there exists an initial selection upon acceptance of children to a sports school, in both of the groups more than half of the children had a

posture distortion in two dimensions, or more exactly: 50% and 55% in experimental and control group respectively (or 22 and 20 sportsmen). Scoliotic component (SC) was noticed in 6 children - 15% in each group; two persons (5%) in the experimental group and 3 persons (7,5%) in the control group, had level one scoliosis. Dysplasia of the lumbar and sacral components of the spine was diagnosed in 7,5% and in 10% of the cases respectively. Analysis of this problem allowed to conclude that although, questions regarding correction of children's postures, means of correction and orientation of their impact, are well known, there are still no technological developments as to the sportive preparation of young acrobats along with correction of their distorted posture.

Because of this, we have felt it necessary to divide the process of the working posture formulation into a number of stages: correction of distorted posture; formulation of working posture in the simplest environment; in the environment of a decreased support area; in various space-time conditions, which approach the conditions of training; during training.

Correction of distorted posture. For the correction of gymnasts' posture we have used means directed at strengthening the arches of the soles, strengthening the muscles of the back and abs, as well development of optimal flexibility of the spine, shoulder and hip joints. At this stage our intervention is justified, as it is based on thorough analysis of the distorted posture. Thus, correction of the scoliotic functional component at the stage of its formulation was done through selective stretching of the tonic strained muscles and stimulation of the weakened muscles.

Formation of working posture in the simplest environment implies completion of a given pose - tight fixation of body parts with optimal extension of the hip joints and increasing lumbosacral angle with the help of coach, and individually while lying on the back, on the stomach, standing by the wall or hanging from a bar. At the given working stage, widely are used the means aimed at formulating the working posture through increasing functions of analyzers.

Formulation of the working posture in the environment of a decreased support area. Having taught the gymnasts to keep the working posture in the simplest possible environment, some coaches suggest to immediately transfer this ability into a specific exercise. Lack of a strong skill in the working posture, which is usually combined with an insufficiently developed level of mobility, leads to mistakes. Therefore we believe in consolidating the learned skill by performance of static poses, but with a lesser support area (standing on one leg, standing on high on tip-toes, as well as maintaining a handstand by a wall or with trainer's help, headstands with a fixed standing posture).

It is necessary to note, that there are significant differences between the ability to maintain a working posture in any static position and maintaining this posture in the process of a dynamic performance of gymnastic elements. In the first case, retention of mutually located body parts occurs with the action of relatively constant, with regards to direction and magnitude, outside forces with the help of the same muscles. In the second case, it is the opposite: the outside forces change both their magnitude and their orientation with regards to the body of the sportsman, which results in the necessity of other muscle group addition and regulation of their tension magnitude. This increases demand for intermuscular coordination, as well as the search for special means that are directed at increasing the effectiveness of this process. In this way, at the stage of *formulation of the working posture in the environment of an increased load on the pose-fixing muscles* it is necessary to aim for the load of the pose-supporting muscles to be greater, than that it experiences in standard gymnastic conditions. This, to our belief, is imperative - creating this reserve - in foreseeing various setback factors, which arise during gymnastic performances.

Mastering working posture in various space-time conditions that approach the standard conditions is contained in completion of exercises, which are complex in coordination, with a fixation of a given posture. For children at beginner level, this could be various types of jumps, and walks in different directions, alternating with rolls and tumbles. Also it is desirable to alternate the surfaces on which the exercises are done (gymnastics mats, soft mats, gymnastic bench, trampoline, balance bean). Henceforth the exercises could include rotation around different axes with the help of special devices.

Mastering the working posture in training environment. After mastering fixation of working position at the previous stages of the learning process, learning the technique of gymnastic exercises will not create many difficulties. As for the correction of a given pose, as a rule, a coach's oral comment is sufficient.

Comparison of functional condition levels, clinical characteristics and posture indicators of researched gymnasts, as well as the level of their special technical training, showed a high efficiency of our developed program, which is aimed at formation of the working posture.

Dynamics of clinical characteristics of ODA identified sufficient differences by indicators of the delta of pelvis, the delta of scapulas and the shoulder index of the young acrobats in the control and experimental group, with a high level of authentic differences ($p < 0,01$). Dynamics of functional characteristics of ODA showed considerable improvement

in gymnasts' spine mobility. Also, in both groups a positive tendency of trunk muscle stamina development was identified. Result analysis of somatoscopy showed minor change in the control group—the number of children with posture distortion at the frontal plane grew from 9 to 16 individuals, that is from 22,5% to 40%. The number of acrobats having a distortion of posture in two planes, however, insignificantly decreased from 55% (22 persons) to 37,5% (15 persons). With a deeper investigation, it was learned that posture improvement in some children had occurred in the sagittal plane, which we think is due to the increase of back muscle strength and that of the abs. However, as a result of the stains, which were occurring without noting initial posture distortion, as well as asymmetric strains, the number of children with posture distortion in the frontal plane had increased.

Other indicators we have received from the experimental group. The number of children having a normal posture had grown from 9 to 34 people (from 22,5% to 85%, respectively). Similarly decreased the amount of children with a posture distortion in the frontal plane - from 8 to 3 persons, that is from 20% to 7,5% and the amount of acrobats have a distortion of posture in two planes had decreased from 50% to 12,5%.

To determine the strength of the skill retention of the working posture we have tested from students of both of the involved groups. Gymnasts were offered to perform, on the trampoline, a series of 10 jumps, with a maximum height, and in a limited area of the landing. Selection of the test was of the following: - the more time spent on a series of jumps, the higher the altitude - the implementation of high jumps, as well as landing in a given area is possible with only a fixed working posture as at the moment of the gymnast interaction with the support, in the process of landing and repulsion, and during the phase of flight.

The results of the gymnasts of the experimental group are greatly higher ($p < 0,01$), than those of the control group. In our view this indicates a positive effect of working posture fixation.

Discussion. Analysis of scientific-methodical literature shows the importance of research in the technique and learning exercises of sportive gymnastic types, with the knowledge of the body pose of the sportsman. It was here that U. Gaverdovski, 2002 [3] - the “working positions”, “working posture”; N. Suchilin, 1989 [5] “border poses”; K. Danilov, 1980 [6] - “salto-beginning”, “figure”, “salto-end”, V. Boloban, 2009 [7] - “launch pose”, “multiplication”, “conclusion pose”.

Going against common beliefs, osteochondrosis of the spine not infrequently is diagnosed in children, as well as in children participating in sports. According to S.V. Hrushev, 2005 [8] in the children's case the basis of a possible development of

osteochondrosis of the spine might be the result of various distortions of posture which were registered during the past years in 60 - 70% of children. Results of our research to a sufficient level add on to the research of the above authors, regarding the common spread of the distorted posture in school children and in children involved in sports [9-12, 13, 15, 16, 17].

Conclusions: 1. It was shown that after implementation of the program directed at formation of the working posture, the amount of children having a normal posture increased from 9 to 34 persons (from 22, 5% to 85%, respectively). Similarly has decreased the amount of children with a distorted posture in the frontal plane - from 8 to 3 persons, that is from 20% to 7,5%, and the amount of gymnasts, having a posture distortion in two planes decreased from 50% to 12,5%.

2. It was determined that the dynamics of clinical characteristics of ODA identified sufficient differences by indicators of the delta of pelvis, the delta of scapulas and the shoulder index of the young acrobats in the control and experimental group, with a high level of authentic differences ($p < 0,01$).

3. It was determined, that gymnasts of the experimental group had scored considerably higher on the special technical preparation testing ($p < 0,01$), than those of the control group.

References

1. Vasikyeva O. Rabochaya osanka v isskustvah dvigeniya, v razrabotke I planirovaniy reabilitatsionnykh meropriyatiy // Fizkulytura v profilactice, lechenii i reobilitatsii, 2(33), 2010, 60-66.

2. Vasikyv O. Obshchiye voprosy sportivnoy travmatologii i ortopedii. Gimnastika: teoriya i praktika: metodicheskoye prilozheniye k zhurnalu «Gimnastika», 1, 2010, 74-85.

3. Gaverdovskiy YU.K. Tekhnika gimnasticheskikh uprazhneniy: [ucheb. posobiye], 2002, 512.

4. Salyamin YU.M., Maksymova YU.A. Travmatyzm v sporti: spetsyfishni poshkodzhennya ta zakhvoryuvannya oporno-rukhovero aparatu akrobativ vysokoyi kvalifikatsiyi. «Sportyvna medytsyna», 2, 2007, 73-76.

5. Suchylyn N.H. Stanovlenye y sovershenstvovanye tekhnicheskoho masterstva v uprazhneniyakh prohressyruyushchey slozhnosti: avtoref. dys. doktora ped. nauk: 13.00.04, 1989, 49.

6. Danylov K.YU. Systemnoe yssledovanye uprazhnenyy na batute kak éffektivnoy modely ovladenyya bezopornymy peremeshchenyyamy v dvyhatel'noy deyatel'nosti: avtoref. dys. ... doktora ped. nauk: 13.00.04, 1980, 37.

7. Boloban V.N., Ye. Sadovski, T. Nizhnikovski, A. Mastalesh, V. Vishniovski. Poznyye oriyentiry dvizheniy kak uzlovyye elementy sportivnoy tekhniki akrobaticheskikh uprazhneniy. Teoriya i praktika fizicheskoy kul'tury, 12, 2009, 42-47.

8. Khrushchev S.V. Fizkul'tura v profilaktike, lechenii i reabilitatsii, 2, 2005, 26

9. Abramov V.V., Smirnova E.JL, Shevchenko I.N. Sostoyaniye zdorov'ya sportsmenok, zanimayushchikhsya atsiklicheskimi, slozhno-koordinatsionnymi vidami sporta. Materialy II Mezhdunarodnogo kongressa «Sport i zdorov'ye», 2006, 7-8.

10. Melent'yeva L.M. Fizicheskaya reabilitatsiya yunykh sportsmenov s narusheniyami oporno-dvigatel'nogo apparata: avtoref. dis. k.m.n., 2007, 20.

11. Potapchuk A.A., Didur M.D. Osanka i fizicheskoye razvitiye detey, 2001, 166.

12. Tikhvinskiy S.B. Dvigatel'naya aktivnost' i fizicheskoye zdorov'ye cheloveka. Materialy III Mezhdunarodnogo kongressa «Chelovek, sport, zdorov'ye», 2007, 145.

13. YU. Maksymova, V. Yl'yn, M. Fyllyppov Zminy sehmentarnoho aparatu khrebta yunykh akrobativ pid vplyvom trenuval'nykh navantazhen' Fiziologichnyy zhurnal. - T. 6. - № 3. – 2014. – S. 160-161

14. YU. Maksymova Rabochaya osanka kak osnova tekhnicheskoy podgotovky zanymayushchykhysya sportyvnyymi vydamy hymnastyky Sovremennyy olymпыyskyy sport y sport dlya vsekh: mat. XVIII Mezhdunar. nauch. konhressa – Kazakhstan 2014. – T. 1. – S. 417-421

15. YU. Maksimova V. Il'in, M. Fillippov Funktsional'naya kharakteristika N-refleksa i M-otveta u akrobatov, ispytyvayushchikh boli v poyasnichnom otdele pozvonochnika Vestnik Severnogo (Arkticheskogo) federal'nogo universiteta. Seriya «Mediko-biologicheskkiye nauki». – 2014. – №1. – S. 53-59.

16. YU.A. Maksimova, YU.M. Salyamín Sovershenstvovaniye trenirovochnogo protsessa akrobatov putem likvidatsii postnagruzochnykh izmeneniy v oporno-dvigatel'nom apparate verkhnikh partnerov Naukoviy chasopis NPU ím. M.P.Dragomanova Seriya 15 naukovo-pedagogichní problemi fízichnoí kul'turi. 2015, Vipusk – 10 (65) 15. S. – 92-96.

17. YU.A. Maksymova, YU.M. Salyamin. Prohrama optimal'noho rozvytku hnuchkosti akrobativ dlya poperedzhennya funktsional'nykh porushen' khrebta verkhnikh partneriv Naukovyy chasopys NPU im. M.P.Drahomanova Seriya 15 naukovo-pedahohichni problemy fizychnoyi kul'tury. – 2015.Vypusk – 10 (65) 15. S. – 90-98.