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DEVELOPMENT OF COORDINATION ABILITIES OF 8-9 YEARS OLD SOCCER PLAYERS WITH A FOCUS ON REDUCING THE SEVERITY OF MOTOR ASYMMETRY

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Annotation. The purpose of the study is a theoretical and methodological substantiation and tracking of the effects of the application of the methodology for the coordination abilities development in soccer players aged 8-9 years with a focus on reducing the severity of motor asymmetry. The article presents the characteristics of the coordination training methodology for 8-9-year old soccer players, which is aimed at reducing the severity of motor asymmetry. It is built in stages (3 stages), contains a developed algorithm for the use of general and special training means (exercises, games, combinations, situational tasks), performed by the leading and non-leading leg, from the leading and non-leading direction, in a certain combination and sequence of execution, consists in the possibility of effective development of the level of coordination abilities, increasing the effectiveness of technical actions in typical situations of the game (both when performing actions with the leading and non-leading sides of the body). During a 6-month experiment with the participation of 47 football players aged 8-9 years, the effects of the developed approach were monitored.

Introduction. An importance of developing various types of coordination abilities in situational, extreme and playing types of sports, including soccer, does not cause doubt among researchers and practicians [1-4]. At the same time, a search for more effective approaches to the coordination training is aimed at implementing new devices and equipment, since it is well-known that developing coordination abilities is successfully and productively supported by a constant variety of means, methods, methodological procedures, conditions of executing a task, frequent change of spatial, power and time parameters of movement when performing a motor task. Modern works note an effect of using various digital training programs, exercises on an unstable surface, using audio and visual auxiliary devices etc. [3-6]. However, further systematization and structuring of means and methods of

coordination training and an Algorithm of their use at different stages of the long-term training in soccer, in conditions of severe competition and intensifying in-game activity, is considered as a relevant issue. A player, who possesses a wide spectrum of motor skills and is able to act effectively in situations appearing from the leading and non-leading side of the body, has a clear advantage [7-8].

The purpose of this study is a theoretical and methodological substantiation and tracking of the effects of the application of the methodology for the coordination abilities development in soccer players aged 8-9 years with a focus on reducing the severity of motor asymmetry.

Results and discussion. There are two main approaches of developing coordination abilities (AC) found in the scientific and methodological literature. The first one is related to a comprehensive influence on the coordination sphere of young athletes. The point of it is that such means of development are selected, in which various types of coordination abilities are affected simultaneously, without separating an ability of balance, spatial orienting, motor precision etc. Supporters of this approach recommend using a game method and outdoor games, games with elements from sports games, sports games with simplified or changed rules, as well as a competitive method using relay races as a main mean of development. In our opinion, a comprehensive approach is suitable for mass and health-improving physical culture classes, and it can be used in sports to some extent. However, in order to influence separate types of AC fully, an objective and selective effect on certain types of AC using chosen field-specific means is more correct. Some researchers note that different types of AC have uneven mechanisms of formation and support and they have a weak correlation between each other. It means that, for example, one person can have a high level of reacting abilities and a low level of motor precision and so on. That is the reason why we find the second approach more effective. It was extensively described in the scientific and methodological literature. The main point of it is in a separate directed and focused influence on specific types of AC. When using the second approach, a comprehensive influence can also be implemented, but its share is chosen considering the fitness of athletes.

Taking the aforementioned into account, when creating a method for developing coordination abilities with a focus on a decrease of the severity of motor asymmetry, designated for beginner soccer players, we chose means aimed at separate types of AC. A share of comprehensive influence was significantly reduced in comparison with a traditionally implemented influence for developing AC in soccer.

The purpose of the developed methodology was contributing to a decrease of the severity of motor asymmetry in case of simultaneous development of the AC level. We assumed that it would be more effective to reduce the level of the

asymmetry's severity in soccer players within the process of implementing coordination training, since a close correlation of mastering the technique with a high level of coordination abilities is well known. It is especially demonstrated in situational sports, game sports, sports with a complicated technique and extreme sports.

Main tasks of the methodology are:

1) Increasing the level of coordination fitness according to indicators of abilities of spatial orienting, balance, kinesthetic abilities (precision of movements according to spatial, power and time parameters) and abilities to react and rearrange movements (when executing actions with the leading and non-leading side of the body);

2) Reducing the severity of motor asymmetry when performing coordination-based tasks;

3) Reducing the severity of motor asymmetry when performing technical movements and typical combinations (on low level of difficulty).

Considering a difficulty of reducing the severity of motor asymmetry, which is mainly due to a hereditary factor, we constructed stages (3 stages 2 months each) in the developed methodology that differed with a level of difficulty of a suggested pedagogical influence, which allowed controlling and avoiding a negative effect of retraining. This effect is clearly described in literature (of pedagogical and biomedical field). Researchers note that in case of using exercises performed with the non-leading limb, from the non-leading side of the body, especially when learning new actions, a decrease of biomechanical parameters of a correct performance, an overstrain of psychophysiological characteristics occur that can lead to mental breakdown in children. In that context, it is highly recommended to apply only dosed influence on the non-leading side of the body with a constant control. A ratio of means of general and special direction in the whole methodology's structure was almost the same (50/50%), but it varied from stage to stage. At the initial stage, measures of general direction were introduced: coordination exercises of general direction, outdoor games, elements from sports games, at the main stage – almost equal ratio, the final stage included mainly measures of special direction: imitation exercises, performing technical actions, performing technical actions in pairs, threes, performing typological combinations, situational tasks, relay races with technique elements.

The first stage is the initial stage. At this stage, the main task was to form skills of executing suggested motor actions with the leading and non-leading sides of the body. A ratio of implemented means was equal for both sides of the body. A "bilateral" symmetrical influence was supported throughout this stage. A difficulty of used means of coordination training was minimal, which was supported by a

selection of these means, tempo of their performance, simplicity of conditions of execution and a task's definition. In order to support the coordination training, we chose only means of general direction (following means are: coordination exercises of general direction for developing reacting abilities, abilities of spatial orienting, preserving balance, precision of repeating and measuring the set spatial, power and time parameters of movement). The Algorithm of implementing these exercises at the initial stage is as follows: one class included exercises aimed at two types of coordination abilities in a following combination:

a) reacting abilities + abilities of spatial orienting;

b) abilities of precision of repeating and measuring the set spatial, power and time parameters of movement + abilities of preserving balance.

At the same time, all tasks were performed in a sequence with the leading limb (side of the body, in the leading direction) first, then with the non-leading limb. A type of hemispheric asymmetry was defined in all test subjects of the experimental group (EG). Sequence of performing tasks did not matter for ambidextrous people, but they were suggested to choose a side of the body for convenience.

The second stage is the main stage: the emphasized influence on the non-leading side of the body with an equal ratio of means of general and special direction. At this stage, the main task was to increase the level of coordination fitness in case of engaging the non-leading side of the body in action. The algorithm of using means of the coordination training at the main stage is as follows: a share of means applied for the non-leading side of the body was greater by means of applying special classes one a week, where all tasks were suggested to perform with the non-leading limb, the non-leading side of the body, in the non-leading direction. Other training days preserved an equal ratio of exercises performed with the leading and non-leading limbs. As means, the main stage included general and special means: coordination exercises of general direction, outdoor games, elements of sports games, situation-based tasks. Combination of means in one training class was as follows: a development of one AC type using means of general direction + situational task + game.

The third stage is the special stage: the influence on the non-leading and leading side of the body with a predominance of means of special direction. The main task of this stage is to reduce the severity of motor asymmetry when performing technical actions and typical combinations (on a low level of difficulty). We assumed that at this stage, premises would appear for a further increase in effectiveness of technical actions in situations of the non-leading side of the body in real game activity. At this stage, we used mostly special means: imitation exercises, performing technical actions, performing technical actions in pairs, threes, performing typological combinations, situation-based tasks, relay races with

technique elements. One more important task of this stage was to develop a resistance to distractions (preserving precision of actions and movements in distracting conditions). In real game activity, interferences appear almost constantly, which is why it is important to form skills of preserving the structure of movement and performing a motor task in case of opposition or other distractions. In order to achieve this goal, we used different methods, for example using a distracting sound background (music of different rhythm, sound signals), performing actions on a surface with obstacles, combination of actions with two and more opponents, using wrist and leg weights etc. In terms of the algorithm of using means at this stage, it should be clarified that learning the suggested tasks began with the leading limb. If the task was performed well, then, after a pause, performance with the non-leading limb was also included. Tempo of execution and a number of repeats, when performed with the non-leading side, decreases. In order to prevent a significant deformation in the technique of performing the task, strict control was carried out.

In the course of the preliminary study, we revealed that beginner soccer players have uneven basic (initial) level of different types of CA, which is possibly is a consequence of age-based features, as well as specificity of coordination fitness of children with a different type of hemispheric interaction. We also discovered a varying level of AC inside the selection, which was due to a level of genetic prerequisites, individual features, since an effect of the training process is still minimal (small experience). It was demonstrated through indicators of range of intragroup values and in the standard deviation indicator. Therefore, it was important to choose means that are easy to dose, adjusting the level of psychomotor and sensory loads and taking into account the level of fitness. Age of those engaged should be also considered, in order to not to cause sensory fatigue and loss of interest by a monotonous influence (many repeats of the same exercises for a precision of actions can cause both sensory and physical fatigue in the local muscle group). Therefore, we assumed that using a significant amount of games, which require the work of analytical systems, can be useful at this stage of training.

The methodology includes a game method, variance method, method of situational tasks and tasks in pairs. Repetitive method was also used, but in small amounts. Moreover, we also used following methodological means: performing with the non-leading limb, in the non-leading direction; “mirror” execution of a task; using signals of different types; using leader elements, audio-leader elements; using opposition and distraction of different types; using objects of different form, mass, sizes and color (game pieces, orienting points, signal flags etc.); using targets of different sizes; watching video footage with a subsequent correction; varying a size and mass of a ball, goals and distance when executing tasks.

During the 6-month experiment that included 47 soccer players aged 8-9 years, we registered effects of using the developed approach. In particular, a decrease in a severity of motor asymmetry (in EG by 20-30% in average), an increase of indicators of coordination fitness of both leading (5-120% according to different tests) and non-leading sides of the body (9-160%), which positively influences a decrease of inaccurate technical actions, including with the non-leading side. It means that it allows increasing the effectiveness of game activity, reduce a number of technical errors, falls, collisions that can lead to injuries. In a group of left-handed athletes, both before and after the experiment, separate indicators of coordination fitness in the experimental (EG) and control (CG) groups were on higher level (indicators related with a precision of performing actions) compared to right-handed players. After the experiment, indicators of the severity of motor asymmetry in the EG were lower in left-handed athletes compared to right-handed athletes. It allows us to assume that left-handed athletes learn actions quicker with the non-leading limb, i.e. with the right leg. It means that they are more susceptible to a two-sided training.

Conclusion. The methodology of coordination training of 8-9-year old soccer players is aimed at reducing the severity of motor asymmetry. It is built in stages (3 stages), contains a developed algorithm for the use of general and special training means (exercises, games, combinations, situational tasks), performed by the leading and non-leading leg, with the leading and non-leading sides, in a certain combination and sequence of execution, consists in the possibility of effective development of the level of coordination abilities, increasing the effectiveness of technical actions in typical situations of the game (both when performing actions by the leading and non-leading sides of the body).

References

1. Vojtus L.V. Teaching the technical actions of 10-11 year old soccer players / L.V. Vojtus, A.P. Mikhajlovskij, V.V. Yanenko // Scientific Notes of the P.F. Lesgaft University. – 2018. – № 12(166). – P. 35-37.

2. Gorskaya I.Yu. The specificity of the development of individual coordination abilities of athletes at different stages of training (on the example of soccer, hockey, sambo, BMX) / I.Yu. Gorskaya, G.S. Bajmakov, S.O. Bulushev // Modern Issues of Sports, Physical Education and Adaptive Physical Culture: materials of the IV International Scientific and Practical Conference. – 2019. – Donetsk. – P. 295-301.

3. Zajtsev N.N. Development of the ability of spatial orienting of young soccer players / N.N. Zajtsev, D.B. Kim, D.A. Rajchuk // Education, Upbringing and Pedagogy: Traditions, Experience, Innovations: materials of the IV All-Russian Scientific and Practical Conference. – 2021. – Penza. – P. 132-135.

4. Zereg F. Improving the coordination abilities of 14-15 year old soccer players / F. Zereg, M.V. Zhijyar, M.Kh. Herfane // Scientific Notes of the P.F. Lesgaft University. – 2017. – № 2(144). – P. 72-77.

5. Pevtsov N.V. Development of coordination abilities and balance in 7-8 year old boys who play soccer / N.V. Pevtsov // Bulletin of Experimental Education. – 2019. – № 2(19). – P. 6-12.

6. Polevoj G.G. Development of specific coordination abilities of 11-12 year old soccer players, taking into account the features of the manifestation of the properties of the nervous system: a monograph / G.G. Polevoj // Ul'yanovsk: Zebra. – 2015. – 105 p.

7. Semenyukov A.A. Rationalization of the training method for young soccer players, taking into account various manifestations of motor asymmetry of the legs / A.A. Semenyukov // Scientific Notes of the P.F. Lesgaft University. – 2009. – № 11. – P. 86-89.

8. Starosta V. Symmetrization of movements – a new concept of training and improvement of sports equipment / V. Starosta // Prospects for the development of modern student sports: Results of Performance of Russian Athletes at The Students Game 2013 in Kazan: materials of the All-Russian Scientific and Practical Conference (December 12-13). – Kazan': Fatherland. – 2013. – P. 470-473.

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