

Development Of Coordination Abilities And Balance Of Primary School Age Children Gulistan State University

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Annotation *The article describes the means of developing balance and coordination abilities in children of primary school age. The necessity of their improvement at this age is shown. Recommendations on the variable use of exercises at this stage of movement training are given. The practice of physical education and sports has a large Arsenal of tools for training coordination abilities. The main means for the education of coordination abilities are physical exercises of increased coordination complexity, containing elements of novelty. The complexity of physical exercises can be increased by changing the spatial, temporal and dynamic parameters, external conditions, changing the order of equipment and inventory, their weight, height, area of supports, increasing its mobility, combining motor skills, combining walking with jumping, running and catching objects, performing exercises on a signal or in a limited time.*

Key words: *coordination abilities, means to develop the balance, a sensitive period, children of primary school age, exercises of the overactive coordination complexity.*

1. INTRODUCTION

A methodical technique aimed at providing additional information is particularly effective. So, using a mirror or directions to control movement makes it easier to master the skill. Limited or complete exclusion, for example, of visual information (glasses, closing the eyes, darkened room) significantly complicates the performance of motor actions [1, 1966, p.177-178].

The widest and most accessible group of tools for the education of coordination abilities is general training exercises that simultaneously cover the main muscle groups. These are exercises without objects and with objects (balls, gymnastic sticks, skipping ropes), relatively simple and quite complex, performed in modified conditions with different positions of the body or its parts, elements of acrobatics (somersaults, various rolls, etc.), exercises in balance [2, 1990, p.13-20].

To develop the ability to quickly and expediently rebuild motor activity with a suddenly changing environment, mobile and sports games, cross-country running, cross-country skiing are highly effective means.

Special preparatory exercises for improving coordination movements are developed taking into account the specifics of the chosen sport, profession. This is a similar coordination exercise with technical-tactical actions in this sport [3, 1980, p.128].

At the initial stage of training, 2 groups of such means are used:

- leading, contributing to the development of new forms of movements of a particular sport;
- developing, aimed at the direct education of coordination abilities that manifest themselves

in specific sports (for example, in basketball-special exercises in difficult conditions).

Exercises aimed at developing coordination abilities are effective as long as they are not performed automatically. Then they lose their value, since the motor action mastered before the skill and performed under the same constant conditions does not stimulate its further development [4, 2000, p.192].

The ability to balance can be static and dynamic. In this regard, exercises related to rotation in different planes, with different positions of the head, limbs, and trunk are useful. These include turns, somersaults, flips, and combinations of exercises.

The factors that affect the stability of the equilibrium under support conditions include the position of the general center of gravity in relation to the plane of the support; the height of the projectile serving as a support, its stability; the speed of movement of the body, its uniformity, etc. To improve the ability to static balance, it is necessary to use the following methodological techniques: increasing the time of maintaining the pose, temporarily excluding visual self-control, reducing the area of support, including preliminary and concomitant movements, introducing counteractions [5, 1999, p.334-339].

The basis for improving the ability to dynamic balance is adaptation to various external conditions. Important means of developing dynamic balance include mobile and sports games, in which the directions of movement change dramatically.

The manifestation of balance is expressed in balancing objects and on objects, for example, balancing with a gymnastic stick, standing on the palms, holding a cube on the head, a ball on a racket while standing still or in motion, keeping the balance on a rolling barrel, etc [6, 2002, p.63-68].

With the development of coordination abilities, it is necessary to solve both general and specific tasks. General tasks include those that are solved when teaching motor action, namely:

- development of the ability to master new and rebuild previously mastered motor actions, while achieving the necessary consistency of individual movements;
- development of the ability to maintain the achieved level of coordination of movements for a long time, despite fatigue, adverse conditions.

Particular tasks are those that are determined by the nature of a particular motor action. These include: the development of the ability to accurately measure and regulate individual parameters of movements and their ratio as part of the whole; the ability to maintain the necessary posture of the body in space; to show tension and relaxation of the muscles [7, 2006, p.188].

In different age periods, there is an unevenness in the development of certain types of coordination abilities. Here is a table of the sensitive period in the development of coordination abilities in children.

Table 1

Type of coordination abilities	Age								
	6	7	8	9	10	11	12	13	14
Ability to manage long-term muscle strains	G B	G B	G B						
Ability to differentiate spatial and temporal characteristics	G B	G B		G	G B	B			
The ability to control the time of implementation on both visual and auditory signals			G B	G B	G B	B			
Ability to keep a rhythm		G B	G B	G B	B				
Ability to navigate in space						G B	G B	G B	B
Ability to maintain balance				G	G B	B			

(D. Hirtz, 1978) symbols: G -girls, B -boys, G/B -girls, boys

The ability of a person to maintain a vertical position in the field of earth's gravity is of great importance. Even relatively simple movements cannot be performed without a sufficiently high level of development of the balance organs. The preservation of a balance in everyday life takes place automatically by reflex [8, 2003, p.188].

Maintaining balance is one of the most important conditions for active human interaction with the external environment. Success in professional activities (for example, builders, installers, sailors) and in some sports (figure skating, acrobatics, Alpine skiing and cross-country skiing, etc.) is significantly determined by the level of development of the balance function. A low level of stato-kinetic stability is accompanied by a deterioration in general well-being, dizziness, nausea, vomiting and even fainting states, and when doing physical exercises, it hinders the development of movement techniques, reduces the level of manifestation of other physical abilities.

It is known, that while maintaining a particular posture, the human body does not remain absolutely motionless, it fluctuates all the time. It is as if a person loses his balance for a moment and regains it again [9, 1991, p.335].

Sports make great demands on the balance function. The ability to navigate in space and time, quickly and accurately perform complex movements in an unstable support area is achieved by improving the analyzers involved in equilibrium reactions. It is impossible to achieve success in sports without a high level of development of this function.

The development of the ability to balance consists in the development and consolidation of appropriate connections in the cerebral cortex, which are important for maintaining balance. This function is one of the complex functions of the central nervous system. Visual, motor, skin and vestibular analyzers participate in the reactions of maintaining balance, reflexively interacting. Equilibrium can be defined as the ability of a person to hold the body or its individual segments in a given (defined) position as a result of complex joint activity of a number of organs and systems aimed at combating the forces of gravity [10, 1997, p.310].

In maintaining balance, the location of the body's center of gravity above the support area is

crucial. The area of support when standing is determined by the area of the foot and the area between the feet. When the line of gravity lowered from the center of gravity of the human body to the area of support passes approximately through the center of this area, the body is in a state of equilibrium. As soon as this line goes beyond the area of support, the body falls, and it requires the inclusion of some additional forces (neuromuscular tension, movement of particular centers of gravity) to keep the body in balance [11, 1996, p.211].

Constant adjustment of the balance helps to maintain stability, in which the projection of the general center of gravity of the body does not go beyond the area of the support. The more perfect the balance function of a person, the faster it restores the person's posture. As the stability increases, the amplitude of body vibrations decreases and their frequency increases [12, 2005, p.214].

Dynamic and static equilibrium are poorly correlated. Therefore, you can have high stability in any position and be unstable in some motor actions.

The highest degree of human stability is stato-kinetic stability, defined as the state of the vestibular apparatus and the balance function, the psychological and functional state of the body, etc.

In children, the ability to maintain balance reaches the level of adults (not engaged in sports), by 13-14 years - in boys and by 10-12 years-in girls.

To develop coordination abilities, exercises are used that place increased demands on coordination, ordering of movements, and organizing them into a united whole [13, 2005, p.32].

The exercises must:

- have the necessary coordination difficulty, difficulty for people engaged in sports;
- contain elements of novelty, unusual;
- differ in a large variety of forms of performing movements and unexpected solutions to motor tasks;
- to reflect the control of the motion parameters in their regulation and self-assessment through the inclusion of individual analyzers [14, 1991, p.190].

For the development of stato-kinetic stability, balance exercises are used, when performing which it is difficult to achieve the stability of the body posture:

- exercises with balancing poses, which are biomechanically disadvantageous for the stable relative position of parts of the body (e.g., handstand on the hands, toes, heels, etc.);
- exercises maintaining body posture in a static position or movement on a high, reduced, movable, an inclined support (stand or movement on balance beam, pole gymnastic benches, etc.);
- exercises with the preservation of static and dynamic stability in terms of additional noise (passing on gymnastic bench after performing a series of somersaults or with your eyes closed, etc.);
- a variety of outdoor games with movements that require balance ("Sovushka", "cockfight", etc.);
- exercises on special training equipment that allows directed to improve the function of the vestibular apparatus (the hanging swing, roped, cyclopedy, loping, centrifuges, etc.).

Active, passive and combined (mixed) methods of developing stato-kinetic resistance are used. With the active method, irritation of the vestibular apparatus is carried out by repeatedly performing special exercises (various turns, tilts and circular movements of the head and trunk, somersaults, etc.). The passive method involves the use of special devices (Barani chair, two-and four-bar swings, loping, centrifuges, etc.) to influence the vestibular apparatus. The disadvantage of the passive method is that in the course of classes, there may be over expression of the vestibular apparatus, especially in children with increased excitability. This can cause negative emotions and unwillingness to engage in projectiles. It is established that

the most effective method of equilibrium development is the combined method, which provides for a reasonable combination of the two methods [15, 2005, p.205].

To stimulate and improve the balance, it is advisable to use appropriate methodological techniques. The table below (L.P. Matveev) reveals various means and possibilities for improving the balance.

Table 2

Methodological techniques for improving the ability to maintain balance

Ways to increase the requirements for the ability to	The implementation of the technique in action
Lengthening the retention time of an unstable posture	The extension phase of the fixed body in a pose "swallow" in the horizontal position of the torso back in the rack on one
Temporary exclusion or restriction of visual self-control	Static exercises and turns on a gymnastic balance beam or pair and group acrobatic exercises with a blindfold
The reduction of the support area	Static and dynamic exercises on a rail, a gymnastic bench or on a narrowed log; jumping and other movements on one leg
Increasing the height of the support surface or the distance from the center of gravity of the	The movement and fixation of the poses on stilts, performing exercises on a balance beam or the uneven bars with an increased height
Introduction of an unstable support	Exercises on a swinging log, a horizontally suspended rope, a sliding platform on rollers
Inclusion of preliminary and concomitant movements that make it difficult to maintain	Fixing static positions after rotational movements (on the floor, on a gymnastic beam, on ice, etc.); juggling balls or other objects in an unstable position (in a stand on one leg in
Introduction of the partner's knocking counteraction	Tugging the partner in a relatively unstable "stand"; martial arts techniques with the task of maintaining the stability of the pose: "repeater fight"
Use of natural environment conditions that make it difficult to maintain balance during	Running, skiing, cycling on rough terrain, with different track conditions, in difficult weather conditions

The development of balance is influenced by such factors as the level of development of mobility in the joints, flexibility of the body, dexterity and accuracy of movements, pace and dynamics of performance, etc. An important factor that increases the ability to maintain balance is the psychological mood and emotional state of the athlete [13, 2005, p.33].

A number of researchers (E.Ya. Bondarevsky, O.P. Panfilov, V.S. Gurfinkel, V.I. Lyakh) conducted studies to identify the most sensitive periods in the development of coordination abilities in school children. Studies have shown that coordination abilities (including balance, as a type of coordination abilities) are more sensitive, easier and more effective to train at certain age periods. The sensitive period for the best development of coordination abilities in schoolchildren is the age period of approximately 7-12 years. Therefore, the main tasks of coordination and motor improvement of children are best solved in the first 6 years of school. The second sensitive period for cyclical sports (skiing, cycling, swimming, running exercises, etc.) falls on the age from 14 to 15 years [14, 1991, p.191].

Coordination abilities are particularly influenced by specialized perceptions - feelings of space, gates, paths, skis, snow, speed, etc. This level determines the ability of an athlete to control their movements in the specific conditions of a particular sports activity. For a cross-country skier, this will be the ability to use different versions of the technique of ski moves, depending on the weather, sliding conditions, terrain, tasks, etc [15, 2005, p.206].

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