

## DEVELOPMENT OF COORDINATION ABILITIES AND BALANCE IN CHILDREN OF MIDDLE SCHOOL AGE

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**Annotation:** The article presents the various approaches to definition of the terms equilibrium, balance, stability and metastability, giving the characteristics of their types. It describes the conditions of the balance preservation and the equilibrium providing system of the person. It shows the basic principles of the development of the equilibrium function, which is important for the effective training. It considers the general requirements for the development of balance function and exercise for the formation of this ability.

**Keywords:** roller skis, equilibrium, balance, stability, balance training, roller ski technique.

The article describes and illustrates the complex of the special physical exercises for development of balance on the roller skis, allowing you to improve the balance of the athletes of the average qualification by 69-83% for four weeks. It defines the negative correlation of the relative growth in time of free movement for each foot on roller skis and time of free movement before training. The increase in time of the free motion on the one roller skis before training depends on the technical and functional readiness of the athlete and reduces the absolute result of the balance training. According to the obtained experimental data the tall athletes have less stable right foot, and heavy athletes have less stable left foot, so the individual recommendations are useful for balance training by anthropometric indicators. Balance training for highly qualified athletes involves carrying out the individual exercises at the beginning of the competitive season to improve moving on steep descents, not reducing the speed and keeping balance. The main means for developing coordination abilities are physical exercises of increased coordination complexity, containing elements of novelty. The complexity of physical exercises can be increased by changing spatial, temporal and dynamic parameters, external conditions, changing the order of equipment and inventory, their weight, height, support area, increasing its mobility, combining motor skills, combining walking with jumping, running and catching objects by exercising on a signal or at a limited time. A methodical technique aimed at presenting additional information is especially effective. For example, using a mirror or landmarks to control movement makes it easier to learn a skill. Limited or complete exclusion, for example, of visual information (glasses, closing the eyes, a darkened room) significantly complicates the performance of motor actions. The widest and most accessible group of means for educating coordination skills abilities are general preparatory exercises simultaneously covering the main muscle groups. These are exercises without objects and with objects (balls, gymnastic sticks, jump ropes), relatively simple and quite complex, performed under changed conditions in various positions of the body or its parts, elements of acrobatics (somersaults, various rolls, etc.), exercises in balance. To develop the ability to quickly and expediently reorganize 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. These are coordinatively similar exercises with technical and tactical actions in this kind of sport. Exercises aimed at developing coordination abilities are effective until they are performed automatically. Then they lose their value, since a motor action mastered to a skill and performed under the same constant conditions does not stimulate its further development. The ability to balance can be static or dynamic. In this regard, exercises associated with rotation in different planes, with different positions of the head, limbs, and torso are useful. These include turns, somersaults, flips, combinations of exercises.

The factors influencing the stability of equilibrium under support conditions include the position of the common center of gravity in relation to the support plane; the height of the projectile serving as a support, its stability; the speed of body movement, its uniformity, etc. To improve the ability to static balance, it is necessary to use the following methodological techniques: increasing the time of maintaining a posture, temporarily eliminating visual self-control, reducing the area of support, including preliminary and accompanying movements, introducing counteractions. The basis for improving the ability to dynamic balance is adaptation to various external conditions. To important means of educating dynamic balance include outdoor and sports games in which the directions of movements change dramatically. The manifestation of balance is expressed in balancing objects and on objects, for example, balancing with a gymnastic stick standing in the palm of your hand, holding a cube on your head, a ball on a racket, standing still or in motion, maintaining balance on a rolling barrel, etc.

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

- development of the ability to master new and rebuild previously mastered motor actions, while achieving the necessary coordination 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 in the composition of the whole; the ability to maintain the necessary posture of the body in space; show muscle tension and relaxation. In different age periods, unevenness in the development of certain types of coordination abilities is observed. Here is a table of the sensitive period in the development of coordination abilities in children. 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 take part in the reactions of maintaining balance, interacting reflexively. Equilibrium can be defined as the ability of a person to keep the body or its individual segments in a given (certain) position as a result of a complex joint activity of a number of organs and systems aimed at combating the forces of gravity. In maintaining balance, the location of the body's center of gravity over support area. 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 support area, the body falls, and the inclusion of some additional forces (neuromuscular tension, movement of particular centers of gravity) is required to keep the body in balance.

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