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SPEECH APPARATUS AND ITS ANATOMICAL AND PHYSIOLOGICAL CHARACTERISTICS

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Abstract
This article analyzes the speech apparatus and its anatomical and physiological properties scientifically and theoretically. The study highlights the structure of the speech apparatus, its central and peripheral parts, and its importance in the process of speech formation. Also, the harmonious functioning of the respiratory, vocal and articulation organs is considered as the main factor in the correct formation of speech.

Keywords: Speech apparatus, anatomical structure, physiological characteristics, articulation, speech organs, central speech apparatus, peripheral speech apparatus, sound formation, respiratory process, vocal apparatus, vocal cords.

Introduction

Knowledge of the anatomical and physiological mechanisms of speech, that is, the organization of speech activity in terms of structure and functioning, firstly, allows us to imagine the complex mechanism of speech in the norm, secondly, a differential approach to the analysis of speech pathology (disorder); thirdly, to correctly determine the paths of corrective action.

Speech is one of the complex higher mental functions of a person.

Speech acts are carried out through a complex system of organs, in which the activity of the brain plays a key role.

At the beginning of the 20th century, the view that the speech function is associated with the presence of special “separate speech centers” in the brain was widespread. I.P. Pavlov gave a new direction to this view. He proved that the localization of speech functions in the cerebral cortex is not only complex, but also has a variable nature, and called it “dynamic localization”.

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Currently, according to the research of P.K. Anokhin, A.N. Leontyev, A.R. Luria and other scientists, the basis of any mental functions is not separate “centers”, but a complex system of functions located in different parts of the central nervous system.
Speech is a special and high-level form of communication inherent only to humans. In the process of speech communication, people exchange ideas and influence each other. Speech communication is carried out through language. Language is a system of phonetic, lexical and grammatical means. The speaker selects the necessary words to express his thoughts, connects them based on the rules of language grammar and pronounces them through the articulation of the speech organs.
In order for human speech to be understandable and meaningful, the movements of the speech organs must be clear and correct. At the same time, these movements must be automatic, that is, they can be performed without the use of special voluntary force. In reality, this is exactly what happens. Usually, the speaker controls only his thoughts, does not even think about what position his tongue should be in his mouth when breathing, etc. This happens as a result of the activity of the speech pronunciation mechanism. In order to understand the movement of the speech pronunciation mechanism, it is necessary to know the structure of the speech apparatus well.
The purpose of the analysis of speech disorders is to scientifically substantiate the content and direction of research into speech pathologies and to reveal the structure of the defect. The principles of analyzing speech disorders form the basis for the classification of speech disorders and the development of scientifically based methods and approaches for their prevention, elimination, and correction.
One of the first researchers to describe the principles of speech disorders, the speech apparatus and its anatomical and physiological characteristics is R.E. Levina. He distinguishes three principles: development, a systematic approach and consideration of the interaction of speech with other aspects of the child's mental development. These principles remain the leading ones in speech therapy in the analysis of speech disorders.
The principle of development implies an evolutionary-dynamic analysis of the origin of the defect.
In addition to the statistical description of speech defects, it is also very important to conduct a dynamic analysis of their origin. In children, whose neuropsychic functions are in the process of continuous development and formation, it is important to assess

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not only the immediate consequences of the primary defect, but also its long-term impact on the formation of speech and cognitive functions.

Analysis of speech defects in the dynamics of a child's age-related development, assessment of its sources of origin and prediction of its consequences require knowledge of the laws and characteristics of speech development at each age period, knowledge of the conditions that ensure its development.

For example, as a result of trauma to the central nervous system in a child, the innervation of the muscles of the speech apparatus is disrupted, which is manifested in the limitation of the mobility of the articulatory organs. This, in turn, causes pronunciation defects of varying severity. However, speech defects are not limited to this. Its motor component (repetition) plays a major role in the perception of speech. Difficulty in repeating sounds disrupts the articulatory support of speech perception. Also, due to the interrelationship in the work of speech-motor and auditory analyzers, it is formed late in such cases. Inaccurate perception of sounds also leads to a delay and lag in mastering the sound composition of the word, which in turn causes difficulties in writing. Children have difficulty mastering writing.

A large role in the development of the cortical speech zones belongs to speech kinesthesia (impulses arising as a result of the movement of the articulatory organs during speech). Speech kinesthesia is impaired in articulation disorders. The flow of afferent impulses to the cortical speech zones decreases, as a result of which their maturation is delayed, which causes a general lag in speech development.

Articulation disorders accompanied by speech kinesthetic deficits are manifested by a lag in vocabulary enrichment, speech memory deficits, etc.

In this case, the consequence of complex pronunciation may be the limitation of the child's active speech. The lack of vocabulary, difficulties in mastering the sound structure disrupt the normal course of mastering the grammatical structure of the language, that is, the child has signs of speech underdevelopment. In this case, if the violation of sound pronunciation as a result of the limitation of the mobility of the articulatory organs is the leading defect, then speech underdevelopment is considered secondary.

From the point of view of development, the analysis of speech disorders allows us to distinguish the leading defect and the secondary disorder associated with it. This is of great importance in the diagnosis of speech disorders.

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From the point of view of modern neurophysiology, the analysis of speech disorders, as well as the study of speech development in norm and pathology, is based on the general laws of the formation of the functional system of the organism (systemogenesis). The doctrine of the functional system, as a broad functional integration of various brain structures, was developed by P.K. Anokhin (1978) on the basis of the latest results. From this new methodological point of view, it is possible to consider speech development in normal and pathological conditions.

Based on the theory of systemogenesis, it is important to take into account the functional periods of speech.

Based on the achievements of modern psychology, the principle of analysis of speech disorders is interconnected with the principle of approach activity. The child's activity is formed in the process of his interaction with adults, and for each period a direct connection with speech development is characteristic. Therefore, the assessment of the child's activity in the analysis of speech disorders is of great importance.

The leading form of activity in the first year of a child's life is his emotional-positive relationship with adults. This serves as the basis for the formation of primary speech communication. Only on its basis does the child form a need for communication with adults, its initial conditions in the form of sound reactions develop, their expressiveness, sensory functions, that is, the communicative-cognitive complex develops. This is of decisive importance for the further mental development of the child.

This type of activity is insufficiently formed in children with weak development (for example, a disease requiring a long stay in the hospital or a lack of communication with others), the initial conditions for speech development are not sufficiently formed, and such a child may lag behind in speech development in the first years of life.

In the second year of a child's life, object-action communication with adults is the leading form of activity that stimulates speech development. Only in the process of performing simple object actions together with adults does the child master the main signs of objects, behavioral experience, accumulate an important reserve of knowledge and ideas about the world around him, enrich his active and passive vocabulary, and begin to use speech communication forms. If the leading form of activity does not change at this age, and emotional-positive communication continues, then the child will have a lag in speech development. A similar situation is observed in children with cerebral palsy.

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Starting from the age of 3, the game becomes the leading activity. In this process, intensive (rapid) development of speech occurs. Special studies have revealed the connection between specific games and speech development in children of younger school age. In this regard, a number of foreign authors recommend the game as a method of assessing and predicting speech development (Ferrell B.I. et al, 1984). Finally, the leading educational activity at school age is the basis for the development of a child's written speech and improving his oral speech.

The principle of a systematic approach to activity is important for analyzing speech disorders in the process of communication, for understanding their genesis, and especially for identifying ways to eliminate and correct them.

References

1. Ayupova M.Y. Logopediya. – Toshkent: O‘qituvchi, 2007.
2. Mo‘minova L.R. Nutq rivojlanishi va logopedik yordam asoslari. – Toshkent: Fan, 2016.
3. Volkova L.S. Logopediya. – Moskva: VLADOS, 2003.
4. Lalaeva R.I. Nutq buzilishlari diagnostikasi va korreksiyasi. – Sankt-Peterburg, 2001.
5. Vygotskiy L.S. Osnovi defektologii. – Moskva: Pedagogika, 1995.
6. Levina R.Ye. Nutq nuqsonlari va ularning psixologik asoslari. – Moskva, 1998.
7. Nurkeldiyeva D.A. Maxsus pedagogika va logopediya. – Toshkent, 2020.