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IMPROVING PERCEPTUAL ABILITIES IN CHILDREN WITH DYSARTHRIA: THEORY AND PRACTICAL METHODS

Iminjonova Mokhichehra Alimardon kizi
Andijan State Pedagogical Institute, Faculty of Preschool Education and Special Pedagogy
Special Pedagogy: Speech Therapy, Group 301 student
iminjonovamoxichexra@gmail.com

Abstract: This scientific article examines psychological, speech therapy, and neuropsychological methods for improving sensory-perceptual processes in children with dysarthria. Dysarthria is a speech disorder resulting from varying degrees of damage to the speech apparatus, in which problems are observed in the child's articulation, phonation, respiration, prosody, and voice characteristics. The article analyzes modern methods for developing sensory integration, attention control, working memory, and tactile-kinesthetic perception. The aim of the study is to develop comprehensive approaches aimed at improving the communicative abilities of children with dysarthria. The article presents the results of an experimental study, as well as practical recommendations.

Keywords: dysarthria, sensory integration, kinesthetic perception, proprioceptive sensation, phonemic hearing, attention control, motor planning, neurorehabilitation, speech therapy intervention, communicative competence.

Dysarthria is a motor speech disorder that develops as a result of damage to the central and peripheral nervous systems. It is characterized by impaired intonation, voice intensity, pronunciation clarity, and rhythmic properties of speech. In children, dysarthria often occurs due to perinatal injuries, cerebral palsy, congenital defects, or various brain diseases. According to statistics, 60-80% of motor speech disorders in children encountered in speech therapy practice fall under the category of dysarthria.

Impairment of perceptual abilities in children with dysarthria leads to secondary problems in their speech and communicative development. Inaccuracy in processing sensory information, insufficient proprioceptive and kinesthetic sensation, and decreased ability to control attention are factors that complicate the child's speech activity. Therefore, improving perceptual processes in children with dysarthria is an important direction for their overall development and enhancement of communicative competence.

Impaired sensory information processing is a common condition in children with dysarthria. The following perceptual disorders are observed:

Proprioceptive-kinesthetic sensory disturbance: Children experience difficulties in sensing the movements of their speech organs and determining their position in space. This impairs the accuracy of articulatory movements.

Tactile perception disorder: A decrease in tactile sensation in the oral cavity makes sensory differentiation difficult when touching the teeth, palate, and various parts of the tongue.

Characteristics of Auditory Perception: Delays in the development of phonemic hearing are observed, which leads to problems in distinguishing and pronouncing sounds. It is particularly difficult to differentiate between phonemes with narrow and wide resonance (for example, S-SH, T-D). The theory of sensory integration (J. Ayres, 1972) emphasizes the importance of receiving and processing sensory information and creating responsive actions in child

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development. The development of sensory integration for children with dysarthria is carried out in the following areas:
1. Proprioceptive therapy - enhancing the sensation of the body's position in space through deep pressure, muscle tension, and relaxation.
2. Vestibular system stimulation - improving the sense of balance and movement.
3. Tactile differentiation - distinguishing between various tactile sensations (soft-hard, pleasant-unpleasant, etc.).
Modern neuroscientific research has shown that brain plasticity allows for the formation of new neural pathways at any age. Therapy based on the following principles is considered effective for restoring motor speech abilities in children with dysarthria:
· Multiple repetitions - automating motor actions.
· Providing semantic content - performing speech exercises in meaningful contexts.
· Gradually increasing the difficulty level - progressively increasing the complexity of motor tasks.
The following exercises are considered effective for developing proprioceptive sensitivity:
1. Exercises for "sensing" speech organs:
· Massaging the tongue, lips, and cheeks using massage brushes of varying hardness.
· Vibration massage - enhancing muscle sensation through vibration.
· Thermotherapy - teaching sensory differentiation through warm and cold stimuli.
2. Developing kinesthetic awareness:
· Repeating various positions of the lips and tongue with eyes closed.
· Perceiving articulatory movements guided by the teacher.
· Performing articulation tasks of varying difficulty (for example, curling the tongue, shaping the lips in different ways).
The following methods are used to improve auditory perception:
1. Sound differentiation exercises:
· Distinguishing sounds of different pitches.
· Differentiating between noise and musical sounds.
· Distinguishing between phonemes with narrow and wide frequency ranges (S-SH, Z-ZH, T-D).
2. Developing rhythmic concepts:
· Repeating various rhythms by clapping, tapping.
· Identifying and repeating stress patterns in oral speech.
3. Developing auditory memory and attention:
· Remembering sequences of sounds.
· Identifying target sounds in a noisy environment.
Visual abilities play an important role in perceiving the intonational aspects of speech:
1. Visual differentiation:
· Distinguishing similar pictures.
· Identification of differences in shape, size, and color.
2. Visual-spatial concepts:
· Teaching the concepts of "up-down," "front-back," "near-far."
· Describing the spatial arrangement of objects.
3. Visual attention:
· Exercises for controlling eye movements.
· Visual search tasks.
Executive attention management is of particular importance for children with dysarthria:
1. Development of selective attention:

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· Focusing on target stimuli in a noisy environment.
· Distinguishing between useful and useless information.
2. Maintaining sustained attention:
· Performing long-term tasks.
· Continuing work despite distracting factors.
3. Attention shifting:
· Quickly shifting attention between multiple tasks.
The study was conducted with 40 children aged 6-9 years diagnosed with dysarthria. The children were divided into two groups: the experimental group (20 children) and the control group (20 children). In the experimental group, the complex methods described above were applied, while in the control group, traditional speech therapy methods were used. The study lasted 9 months and employed the following diagnostic methods:
· Sensory integration assessment tests
· Methods for assessing phonemic hearing
· Attention ability measurement tests (d2 test)
· Speech motor skills assessment scales (DFCS - Dysarthria Functional Communication Scale)
The research results revealed the following differences:
1. Sensory integration indicators: In the experimental group, proprioceptive sensitivity improved by 65%, tactile differentiation increased by 58%, and vestibular responses improved by 42%. In the control group, these indicators were 25%, 20%, and 15%, respectively.
2. Phonemic hearing results: In the experimental group, the differentiation of phonemes with narrow and wide pitch range improved by 72%, and auditory memory increased by 48%. In the control group, these indicators were 30% and 22%, respectively.
3. Attention indicators: In the experimental group, selective attention improved by 55%, and attention span increased by 40%. In the control group, these changes were 20% and 15%, respectively.
4. Speech motor skills and communication: In the experimental group, articulation accuracy improved by 68%, intonational completeness of speech increased by 60%, and overall communicative ability improved by 75%. In the control group, these indicators were 35%, 28%, and 32%, respectively.
The development of sensory-perceptual abilities in children with dysarthria is an important approach for enhancing their speech and communicative competence. The research results show that a comprehensive approach - simultaneous development of sensory integration, phonemic hearing, attention control, and visual-perceptual abilities - is significantly more effective than traditional methods.

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