SECTION 10. SPEECH THERAPY. SPECIAL PSYCHOLOGY

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FORMATION OF NEUROMOTOR FUNCTIONALITY IN OLDER PRESCHOOL CHILDREN WITH SPEECH DISORDERS

ФОРМУВАННЯ НЕЙРОМОТОРНОЇ ФУНКЦІЙНОСТІ В ДІТЕЙ СТАРШОГО ДОШКІЛЬНОГО ВІКУ З ПОРУШЕННЯМИ МОВЛЕННЯ

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Neuromotor functionality includes the work of wrist, oral, articulatory kinesthetic and kinetic praxis. Praxis is a system of voluntary, purposeful motor actions that provide practical skills of various activities. The frontal part of the premotor cortex of the cerebrum organizes motor activity, carries out a sequential synthesis of separate motor impulses into single "kinetic structures" [2; 3; 5].

Brush praxis develops in parallel with speech mechanisms and cognitive processes. The motor activity of the fingers through kinesthetic impulses innervates speech zones in the cerebral cortex, in particular Broca's center. The development of fine motor skills is a prerequisite for children to master oral and written speech (1; 3; 4). Oral praxis ensures motor activity of the organs of the articulatory apparatus. Differential articulatory movements of the facial muscles, lips, tongue, and oral cavity are performed by oral kinesthetic praxis. Oral kinetic praxis activates the actions of the organs of articulation [2]. Articulatory praxis is the ability to pronounce sounds and form an articulatory posture in accordance

with the speech sound. Kinesthetic articulatory praxis is responsible for reproducing isolated speech sounds and creating articulatory positions. Combining sounds into syllables and words provides kinetic articulatory praxis [2].

Visual coordination and coordination of movements is provided by the central nervous system. Formed skills of written speech and drawing require coordinated high-frequency serial movements of the fingers, hand and hand from the child. The initial mastery of writing is controlled by the proximal joints (arm, shoulder), so the first movements during drawing have a large range of motion with a specific pencil grip. Strengthened control over isolated finger movements and hand manipulation improves the ability to work with a writing tool (pencil, pen, brush), improving the process of drawing and writing graphic symbols (letters, numbers, etc.). Graphomotor skills in children are formed gradually, in particular, with the help of focusing attention on visual stimuli, their accurate interpretation; memorization and reproduction in memory of graphic samples; skillful manipulation of hand movements; kinesthetic feedback; implementation of visual-motor coordination. Inconsistent functioning of the visual analyzer system and hand praxis in elementary school students during the acquisition of language literacy leads to dyslexic and dysgraphic disorders. Therefore, the formation of visual and motor skills is of great importance, which contribute to the assimilation of visual-spatial knowledge (mathematical, written), ensure social and intellectual development, and affect the academic success of the child.

The formation of neuromotor functionality involves three stages of work: propaedeutic-thorough, variable-sequential and speech-active. In particular, the propaedeutic and thorough stage prepares the child for learning basic knowledge and skills, namely: finger praxis – orientation to a sample and musical accompaniment during the performance of differentiated hand movements; oral praxis – articulatory warm-up, performance of static articulatory movements with visual reinforcement (observation of performance of articulatory actions in the mirror; orientation to the example of the teacher, image in the picture, demonstration from a video presentation); articulation praxis – familiarization with the organs of articulation (pictures, poems, riddles, didactic games); familiarization with the articulation of sounds (by visual sample and auditory perception).

The variable-sequential stage − involves a combination of visual and speech actions during the formation of: finger praxis − orientation to a sample, speech accompaniment during the reproduction of finger positions and differentiated hand movements; oral praxis – articulatory

gymnastics, performance of dynamic articulatory movements with visual reinforcement; articulatory praxis – production of sounds according to a visual and auditory pattern (sound imitation), differentiation of sounds, their automation, isolated in syllables (direct, reversed, intervocalic positions, with matching consonants), words (at the beginning, end, in the middle), sentences.

Speech-active stage − involvement of the child in the speech environment during the formation of: finger praxis − performing actions with the fingers of the hands with various objects (laying out a mosaic, folding origami, puzzles, stringing a necklace on a thread, tying shoes, fastening buttons, depicting graphic drawings, etc.) verbal instruction; oral praxis – independent performance of static (kinesthetic) and dynamic (kinetic) articulatory movements according to verbal instructions (without visual reinforcement); articulation praxis − fixing the learned sound in speech during communication.

Bibliography:

1. Amiel-Tison C, Gosselinet J. *Neurological Development from Birth to Six Years: Guide for Examination and Evaluation.* Baltimore M.D : Johns Hopkins University Press; 2001.

2. Bielova O., & Konopliasta S. Functionality of oral and articulatory praxis in older preschool children with logopathology. *CHILD`S HEALTH*, 2023.18(6). P.410–416. https://doi.org/10.22141/2224-0551.18.6.2023.1627

3. Bielova O., Konopliasta S. Description of kinesthetic and kinetic motor praxis in older preschool children with logopathology. *Pedagogy of Physical Culture and Sports/* 2023. 27(5):386–395. https://doi.org/10.15561/26649837.2023.0505

4. Cameron CE, Cottone EA, Murrah WM, Grissmer DW. How Are Motor Skills Linked to Children's School Performance and Academic Achievement? *Child Development Perspectives*. 2016;10(2): 93–98. https://doi.org/10.1111/cdep.12168

5. Wang MV, Lekhal R, Aarø LE, Schjølberg S. Co-occurring development of early childhood communication and motor skills: results from a population-based longitudinal study: Co-development of early communication and motor skills. *Child: Care, Health and Development*. 2014;40(1): 77–84. https://doi.org/10.1111/cch.12003