

ENHANCING SPEECH DEVELOPMENT IN PRESCHOOL CHILDREN THROUGH MOTOR ACTIVITY

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Abstract. *In working with children who have speech disorders, a notable delay in motor function development is often observed. This delay manifests through a lack of coordination, imprecision in movement execution, motor clumsiness, a slower pace of movements, and compromised fluidity and range during exercises, whether demonstrated or instructed verbally. These children typically face challenges in mastering self-care skills, and their coordination of hand movements along with visual control (hand-eye coordination) is significantly compromised. Moreover, their motor memory appears diminished. An examination of the medical histories (anamnesis) of children with speech pathologies reveals that signs of atypical motor development can be seen from a very early age. For instance, milestones such as holding up their head, sitting, standing, and other physical activities such as climbing, walking, and jumping are achieved later than expected. Frequently, these children also exhibit signs of being physically frail, having low endurance, and experiencing rapid fatigue.*

Keywords: *homunculus, "Knock-knock", "Top-top", "Ga-ga-ga", the speech-motor center (Broca's area)*

It is crucial to emphasize that these deficiencies are not limited to just one aspect of motor skills but span across all components: gross motor skills, fine motor movements of hands and fingers, as well as facial expressions and articulation.

The intricate link between motor functions and speech development is a topic extensively explored and validated by the research of prominent scientists like Pavlov, Leontiev, and Luria. Within the cerebral cortex, the motor center and the speech-motor center (Broca's area) are positioned in close proximity to each other, with the latter essentially forming a part of the former. This proximity underscores a fundamental principle: the development of speech is intrinsically tied to the advancement of a child's gross motor skills. The evolution of speech and motor abilities, both fine and gross, as well as their disorders, progress in tandem.

It has been established through research that approximately one-third of the cerebral cortex's motor projection area is dedicated to the hand's projection, situated near the speech zone. This relationship is vividly illustrated in the "Homunculus" (little man) diagram by Penfield, which highlights the extensive area occupied by the hand's projection.

From a physiological perspective, engaging in physical activity enhances brain oxygenation, which in turn nourishes nerve cells. A diverse array of movements activates the speech-motor analyzer more vigorously, laying a solid foundation for the rehabilitation of speech impairments. Psychologically, movement offers children greater opportunities to explore and understand their environment. This curiosity fosters an expansion in both passive and active vocabulary. Consequently, children who engage in regular physical activities tend to grasp the meanings of spoken or written texts more effectively, which in turn positively influences their speech development.

The precise and dynamic execution of exercises targeting the legs, arms, trunk, and head plays a crucial role in preparing and refining the movements of the articulatory organs (lips, tongue, and lower jaw), which are pivotal for the formation of correct sound pronunciation. Integrating motor exercises with a child's speech activities helps in coordinating the movements of specific muscle groups (including arms, legs, head, and body) with speech.

There exist numerous methods to achieve clear coordination between speech and movement, among which games stand out as the most notable and effective approach, especially for preschool children. Games are the predominant method for developing the ability to coordinate speech with movement in this age group, offering an engaging and interactive platform for learning.

A special emphasis is placed on games involving a ball, which hold a unique position among various activities aimed at enhancing both motor and speech development. These games not only stimulate physical activity but also encourage verbal expression, making them an excellent tool for fostering the integration of speech with movement.

Why with the ball?

The ball, with its spherical shape, offers a unique tactile experience unmatched by objects of any other shape. It provides the largest surface area for contact with the palm, which significantly influences the motor skills of the fingers. Engaging in activities like throwing and rolling balls aids in the development of various skills such as hand-eye coordination, dexterity, rhythm, movement coordination, and spatial orientation. Moreover, ball activities inherently encourage the use of the left hand, which is vital for the comprehensive motor development of children and the enhancement of interhemispheric connections in the brain. Importantly, these games do not require expansive spaces to be effective.

For speech development purposes, ball exercises are often accompanied by verbal tasks. This speech accompaniment ensures that body movements are synchronized with a specific tempo, while the strength and expressiveness of the voice influence their amplitude. Recall the delightful speech game from childhood, "I know five..."? This game, adaptable to any lexical category such as animals, birds, clothing, furniture, etc., is unjustly overlooked today. It serves multiple purposes: it fosters speech and cognitive development, specifically the cognitive operation of generalization, enhances motor functions, and promotes the coordination of speech and movement.

Ball games are versatile tools in addressing various speech challenges, including vocabulary expansion, the development of grammatical structures, enhancement of phonemic awareness, and the formation of correct sound pronunciation. Among the strategies for stimulating and developing speech, speech-movement games stand out. They encourage children to pay close attention to their own speech and that of adults, identify and correct speech errors, articulate sounds accurately, and develop intonational expressiveness and grammatical complexity. Furthermore, these games enrich children's understanding of their environment while also improving their attention and memory.

The next way of influencing speech through motor activity is the recitation of poetic texts in combination with movements. In the process of reciting poems simultaneously with movements, speech is rhythmicized, becomes louder, clearer and more emotional.

During speech accompaniment activities, there is a significant accumulation and activation of vocabulary. This approach is also applicable to non-verbal children, beginning with simple

sound imitations that mimic everyday actions and sounds, thereby forging a connection between sound, action, and meaning:

"Knock-knock" simulates hammering nails with a hammer.

"Top-top" represents the sound of stomping feet.

"Ga-ga-ga" mimics the flapping of "wings."

"Tick-tock" corresponds to bending to the sides.

Following these initial sound imitations, logorhythmics serves as another effective method for integrating movement with speech. Logorhythmics is a comprehensive system of motor exercises that intertwines various movements with the articulation of specific speech materials and music. In this context, music acts as a central organizing and guiding force. It plays a crucial role in setting the pace and character of the child's movements, fostering the development of melodic and intonational aspects of the voice, and enhancing the ability to synchronize singing, speaking, and movement.

Through logorhythmics, children are engaged in an immersive experience that not only aids in speech development but also encourages musicality, rhythm, and expressive movement, laying a foundational framework for the holistic development of communication skills.

In logorhythmic activities, emphasis is placed on practicing the rhythmic structure of words and the clear articulation of age-appropriate sounds, thereby enriching the children's vocabulary. As the children progress, the complexity of the speech material is gradually increased. The frequent repetition of learned content is instrumental in developing motor, auditory, speech, and singing abilities.

Teachers and educators can integrate logorhythmic exercises at various points during the classroom routine—before lessons begin, as a brief interlude of physical activity within lessons, or at the conclusion of classes. Additionally, these exercises can be incorporated into morning routines, music classes, and physical education sessions. To prevent speech disorders from an early age, phonetic rhythmics can serve as a foundational method. This technique merges individual sounds with movements, such as pronouncing the sound "AAAA" while moving hands through the air to the sides, or "OOOO" with hands stretched out to the sides with tension. Each sound, like "UUU" with hands pushed forward and palms facing outward, "AII" with index fingers pointing upwards and hands raised high while standing on toes, or "RRR" with hands in front moving as if rowing, is paired with a specific movement. Other examples include "ssss" as if pressing on a pump and "LLLL" mimicking flashlights.

The profound impact of finger gymnastics on speech development cannot be overstated. Finger movements stimulate overall speech development and specifically enhance articulatory motor skills. Initiating work with non-verbal children often begins with developing finger motor skills. Engaging in physical exercises and movement-based games not only addresses speech tasks more effectively but also ensures that children enjoy the activities without experiencing fatigue.

Employing various types of motor activities in tandem with ongoing speech therapy offers an additional resource for psychomotor and speech correction. This holistic approach fosters an enjoyable and effective learning environment, encouraging children to explore and develop their speech and motor skills in a supportive setting.

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