

Sarmīte Tūbele¹

Logorhythmics in speech therapy

Abstract: *Background.* Logorhythmics is a system of speech exercises which are often performed accompanied by music in order to develop the sense of language, rhythm, coordination of speech and movements etc. Logorhythmics can be considered as a movement exercises system performed for corrective speech therapy needs. Logorhythmics, despite of its organised system, is only a supplement to speech therapy classes, because logorhythmic speech therapy exercises are subjected to speech therapy purposes. It is a new type of speech correction, based on the rhythm of music and the use of word combination. *The goal of the research* is to analyse theoretical findings and create a theoretical basis for further practical activities. *Research methods.* Analysis of scientific literature is used in this article. *Results.* Definitions of logorhythmics are presented and discussed. There are many developmental aspects which are influenced by using logorhythmics. It has its rehabilitative, educational (cognitive) and correctional tasks. Its methodological base lies on Vygotsky's findings about the leading role of teaching and education in child's psychological upbringing. Its theoretical base is provided by N. Bernstein's theory of movement and its five organisational levels. It is necessary to take several principles of logorhythmics sessions into account. The impact of logorhythmics is also on the development of children's creative abilities. *Main conclusions.* 1) Logorhythmics is a system which has its tasks, methodological base, theoretical base and it follows definite principles, 2) Logorhythmics is a system which can be used as a support method of intervention in speech therapy or as a separate procedure, 3) Logorhythmics affects a person's physical, moral, intellectual and aesthetic education and rhythm, and as such, it has its influence on various acute psychophysical disorders, 4) The rhythm constitutes a basis for the formation of correct speech and its perception; the ability to reproduce various rhythms correctly promotes adequate rhythmic reproduction. Rhythmic lessons help to discover children's creative abilities.

Key words: logorhythmics, speech therapy.

*

Logorytmika w logopedii

Abstrakt: *Tło.* Logorytmika jest systemem ćwiczeń językowych, które są często wykonywane przy akompaniamencie muzycznym w celu rozwinięcia wyczucia językowego, rytmu oraz koordynacji pomiędzy językiem a ruchem. Może być postrzegana jako system ćwiczeń ruchowych wykonywanych dla potrzeb korekcyjnego leczenia

¹ Sarmīte Tūbele, professor at the University of Latvia, Faculty of Education, Psychology and Art, Department of Pedagogy; the Riga Teacher Training and Management Academy and the Centre of Children's Language Research.

logopedycznego. Pomimo swojego zorganizowania systemowego, stanowi ona jedynie uzupełnienie zajęć logopedycznych, jako że ćwiczenia logorytmiczne jako takie, służą celom leczenia logopedycznego. Jest to nowy typ korekty mowy, bazujący na rytmie muzycznym i wykorzystaniu połączeń słownych. *Cel badań.* Analiza teoretycznych wyników oraz utworzenie teoretycznej bazy dla dalszej praktycznej działalności. *Metody badawcze.* Analiza literatury naukowej. *Wyniki.* Definicje logorytmiki są przedstawione i poddane dyskusji. Istnieje wiele aspektów rozwojowych, na które logorytmika wywiera swój wpływ, jako że wypełnia ona zarówno funkcję resocjalizacyjną, jak i edukacyjną (poznawczą) i korekcyjną. Jej podstawa metodologiczna zakorzeniona jest w wynikach badań Wygotskiego na temat wiodącej roli nauczania i edukacji w psychicznym rozwoju dzieci. Teoretyczna podstawa osadzona została na teorii ruchu N. Bernsteina z jej pięcioma poziomami organizacyjnymi. Należy wziąć pod uwagę kilka zasad dotyczących sesji logorytmicznych, jako że mają one również wpływ na rozwój zdolności twórczych dzieci. *Główne wnioski.* 1) Logorytmika jest systemem posiadającym swoje funkcje, jej baza metodologiczna i teoretyczna określona jest przez pewne zasady. 2) Logorytmika jest systemem, który może być użyty jako pomocnicza metoda interwencji w leczeniu logopedycznym lub też jako oddzielna procedura. 3) Logorytmika wpływa na fizyczne, moralne, intelektualne i estetyczne wykształcenie oraz odciska swoje piętno na psychicznych/psychofizycznych zaburzeniach czynności. 4) Rytm stanowi podstawę do kształtowania się poprawnego mówienia i jego percepcji; umiejętność poprawnej reprodukcji różnych rytmów propaguje zdolność właściwego odtwarzania rytmu słowa. Lekcje rytmiki pomagają dzieciom odkryć swoje zdolności twórcze.

Słowa kluczowe: logorytmika, logopedia.

Introduction

Gr. 'logos' – word, 'rhythmos' – related with the rhythm. It is a system of speech exercises which are often performed accompanied by music for the development of the sense of language, rhythm, coordination of speech and movements etc. (Lüse, et al., 2012). Purposeful coordination of different speech therapy exercises with music and movement has created logorhythmics exercises, which can be used throughout correctional developmental procedures in the form of: exercises of small wrist and finger muscles; exercises on articulation organs; correction of breathing; improvement of phonematic hearing; separation of words into syllables; auditory and visual attention and memory improvement. The exercises, being a combination of word, music and movement, also activate and regulate muscle tone and motility (Lüse, et al., 2012). They can be included in any correctional, rehabilitation and other processes for people with various speech and development disabilities. It is useful and important in the treatment of stutterers, especially children and adolescents. Elements of logorhythmics can be used in every session.

Methodology

Analysis of scientific literature is used to reinforce the theoretical basis of the concept.

Results

The theoretical approach is based on Russian findings in order to reveal the essence of logorhythmics and the possibility to use these exercises in speech therapy.

Rhythm perception causes various kinesthetic sensations, i.e. rhythm organises the development of movements, improves their organisation and performance in time and space, including speech movements (Волкова, 2003). The base of rhythmics lies in the connection of movements with music and as such, it promotes:

- development of volition and emotions,
- harmonious physical and artistic development,
- development of musical hearing, attention and perception,
- development of memory,
- expressiveness of movements,
- forms of emotional responsiveness,
- expression of character and tempus of a musical piece through movements.

In these sessions, we may use: running, jumps, walking and marching in different directions, singing, practising different types of musical instruments, exercises as games, artistic gymnastics elements, dance and imitation of movements. It is very useful, because it promotes: muscle tone optimisation, strengthening of bone and muscle apparatus, overall development of the image of the body, the development of the sense of rhythm, formation of spatial impressions, understanding of time concepts, dynamic organisation of the act of movement, development of simultaneous and reciprocal (mutually related, corresponding) sensorimotor interaction, interaction between cerebral hemispheres, deliberate movement in the room, development of cognitive processes (attention, perception, memory, thinking, imagination) (Волкова, 2003). This impact will not be immediately visible, but its outcome is stable. Indirectly, this working system has its importance in the development of speech breathing rate/rhythm and oral praxis, in mimic muscle strengthening, in the development of the phonological system and speech rate and rhythm, in the development of speech melodic intonation field; it creates the ability to combine movement and

speech and facilitates the development of child's self-esteem, regulates arbitrary (intentional) behaviour and fosters interpersonal relations.

Tasks of logorhythmics

G.A. Volkova enumerates the following tasks of logorhythmics: rehabilitative, educational and correctional. The rehabilitative task denotes that logorhythmics strengthens bones and muscles, develops breathing, motor, sensory functions, a sense of balance, correct posture, gait/pace, graceful movements in people with speech disabilities. The educational objective is to facilitate the development of movement skills and abilities, spatial notions and the ability to arbitrarily (intentionally) move in space in relation to other people and objects, to develop agility, strength, coordination of movements, as well as their organisational skills. Implementation of educational tasks also promotes moral, esthetic and cognitive development; it promotes the sense of rhythm, the ability to understand musical expression; the ability to move expressively according to a given image. It also fosters positive personality qualities. Implementation of correctional tasks takes into account the structure and speech disorder mechanism, as well as the complexity and operational phases of speech therapy. Speech therapists consider the specific features of patient's age and personality, the condition of their motor system, the degree and nature of disorders within speech and non-speech processes, such as: spatial praxis and gnosis, the level of development in auditory and visual perception, attention, memory and so on (Волкова, 2003).

The methodological foundation (base) of the offered approach is based on the findings by L.S. Vygotsky about the leading role of teaching and education in child's psychological upbringing (Выготский, 2003), which are confirmed by neuro-psycho-physiological studies, i.e. the more intense and varied the flow of information into the child's brain; the faster functional and anatomical maturation of its central nervous system; on psycho-physiological findings of speech processes, as the most complex systems of sensomotor coordination; on the opinion of ПУОТР АНОХИН, presented by Vygotsky, stating that in the early stages of development the link between the highest psychic processes and their sensual base is particularly clearly visible (Выготский, 2005) and on the findings of neuro-physiology considering temporal and spatial aspects in human mental activity as developing in stages.

Nowadays, by logorhythmics we understand one of the types of kine-therapy which focuses on overcoming speech disorders by means of the

development of sphere of movements, and education and correction making use of words and music.

Theoretical base of logorhythmics

The theoretical base of logorhythmics is founded on N.A. Bernstein's theory of movement organisation levels. There are 5 levels:

- 1) Level A – involuntary (unintentional) movements (e.g., cold twitch etc.), which in people is formed as an anatomical substrate in subcortical structures;
- 2) Level B – also involuntary (unintentional) movements, but harmonised (synergistic) in the whole body (bending, ducking, “walking” movements of the baby, automation of different movement abilities, emotional pantomimic movements etc.); anatomical substrate in vision area, and the pale sphere.
- 3) Level C – provides orientation in space, movements are targeted (swimming, typing, pianist's hand movements etc.); anatomical substrate in pyramidal and extra-pyramidal system.
- 4) Level D – conscious activity level (drinking out of a cup, drawing); these are actions, rather than operations, because their goal may be achieved in different ways; anatomical substrate in the structure of parietal cortex pre-motor area.
- 5) Level E – e.g., lecturer's speech and other movements, dance, which require only arbitrary (intentional) movements; the anatomical substrate of this level has not been conclusively researched yet, but BERNSTEIN basing on the works of A. Luria², emphasises that frontal lobes of the cerebral cortex participates in the regulation of involuntary movements; no mental process which secures spatial orientation and coordination is possible without coordinated brain functioning (Бернштейн, 1990, 1991).

Principles used in logorhythmics

The preset speech therapy and phonetic rhythmic tasks are achieved on the basis of the following principles (Волкова, 2003):

1. The principle of proactive approach – early detection of children with functional and organic development abnormalities and adequate correctional teaching are necessary.

² Александр Романович Лурия, 1902–1977, Russian psychologist.

2. The principle of introducing gradual teaching (based on Vigotsky's idea on the "nearest development zone"– teaching should lead to development).
3. The principle of multi-functional approach – during one lesson of phonetic rhythmic several correctional tasks should be simultaneously solved.
4. The principle of children's consciousness and activity – teacher should use children's cognitive abilities activation techniques. Cognitive tasks should be set to children for solving of which they use their experience. This principle promotes more intensive mental development and foresees that children understand the taught material and successfully use it in future practice.
5. The principle of accessibility and individual approach – with respect to age, physiological specificity and character of pathological processes. Continuity of movements, speech and musical tasks.
6. The principle of gradual increase of requirements – transition from simpler to more complicated tasks proceeds gradually when child acquires and strengthens its skills.
7. The principle of visibility – ensures all analyser systems, close links and interactions within the organism in order to enrich children's hearing, vision and movement images.

From the point of view of differentiation of influence tools, a traditional rhythmic lesson consists of 5 parts: orientation in space, rhythmic gymnastics exercises, exercises with musical instruments for children, games accompanied by music, dance exercises. Depending on teachers, the set tasks for particular parts of the lesson should be allotted a different period of time, at the beginning and at the end of the lesson calming exercises should be introduced (Волкова, 2003).

Rhythmic gymnastics exercises contribute to the development of neck, shoulders, body, leg muscles, legs and arms, coordinated movements of the head, movement coordination and necessary musical rhythmic skills. Exercises involving musical instruments include orchestral organisation, when children adopt the orientation on rhythm of music from the teacher. It is not recommended to learn special orchestral compositions. Plays accompanied by music teach children to change the direction (character of their movement) according to a given rhythmic image as music changes. Dance exercises include the ability to accurately and expressively execute the key elements of dance and movement, and to discover unique characteristics of folk dances through movements. When forming creative tasks children can exercise their individual movements, as well as rhythmic, theatrical and other abilities (Микляева, et al., 2006).

Key concepts of logorhythmics

In order to understand the nature of logorhythmics, the notions of movement, movement skill, movement ability, psychomotor development, rhythm, rhythmic, musical rhythm, musical rhythmic sense, musical and movement education, movement games, kinesitherapy, therapeutic rhythmic, rhythmic of speech therapy should be explained. These concepts are closely linked, although they emerged in different periods of human development. Movement is the main biological feature of living creatures, it develops and improves together with the evolution of the living matter. The highest motor perfection is achieved in human phylogenetical development, in which the organism becomes a self-regulating system nested in the system "organism-environment", movement being one of the main balancing mechanisms within this system. Human organism does not only simply upholds the balance with the environment, but it also actively adjusts to it and during this adjustment process, on the one hand, it structurally and functionally improves, and on the other hand, it actively changes and adjusts the environment. In this process, movement obtains a specific, qualitatively new character, which is determined by conscious, socially biological human activity. Movement is used as a powerful prevention, treatment and rehabilitation factor (Микляева, et al., 2006). It is a skill defined as an acquisition level of a movement technique, which differs depending on increased focus of attention on its separate parts and on types of performance. The awareness of movement is necessary in order to fulfill the preset movement aim, to control it and in some cases even to partially automatise the skill in connection to unexpectedly changing implementation conditions (Волкова, 2003). The formation of the movement skill is a dynamic stereotypical development process, involving the interaction of primary and secondary messenger systems; the latter being of more significance. Psychomotor development takes place in close relation to motor development. This connection is so tight that disorders of psychic development cause so many diverse mutual correlations with movement disorders that the term psychomotor development is used both, in the case of norm and pathology. Body movement and the reception of different senses (visual, auditory, tactile, taste, balance, kinesthetic, etc.) in early developmental stages constitutes a tool for discovering the surrounding world, this being a more elementary level than intellectual cognition. If psychomotor development is impaired, there is incomplete or incorrect analysis of different sense modalities. If one analyser is turned off, the sensitivity level of the rest decreases.

It is not possible to find a definition of rhythm which would correspond to all cases. Most commonly, the term rhythm is associated with peculiari-

ties when change of phenomena occurs in time, but there is also the notion of spatial rhythm in regard to spatial arts, such as ballet, painting, sculpture, architecture. The main feature of rhythm is apparent in more or less strict periodic repetitions, i.e., where the concept of rhythm is the most important. This feature might not be clearly visible, e.g. in plays or prose rhythm. Sometimes, periodic repetitions are not characteristic even in musical rhythm (Микляева, et al., 2006). The sense of rhythm is of motor and active nature, accompanied by motor reactions. The essence of this reaction is that the perception of rhythm evokes a great number of kinesthetic sensations, such as: tongue, head, jaws, toe muscles contractions, tension occurring in the larynx, chest and limbs, startling (hidden) movements of the head and respiratory muscles, as well as simultaneous stimulation of antagonistic muscles (flexors and extensors), which cause change of tension and relaxation phases (the organ doesn't change its spatial position) (Волкова, 2003). The most active motor reactions are manifested by perceiving accent with both real and imaginary movements. Real movements manifest themselves as startling twitches (hidden) in vocal cords and subdivisions of the voice apparatus, in fingers, lips and other muscles (it is not visible externally), as well as full movements manifested externally (foot tapping, head swings, hand twitches) (Волкова, 2003).

Development of speech and movement

It is very important to understand the development of co-ordination of speech movements. Their content involves optimisation and improvement in the muscular tone of the main psychomotor characteristics, i.e. static and dynamic co-ordination and memory of movements (general, finger, facial expression, articulation and others) (Микляева, et al., 2006). The main implementing rules for lessons involve the adult taking over the executive functions of the “weak link” during the process of interaction and the material being acquired gradually. Some authors emphasise that the development of proper breathing also takes place in a certain order based on imitation in order to develop lower (diaphragm or abdominal) breathing; differentiates inhalation and exhalation through the mouth and nose (speech breathing rhythm exercises); and develops respiratory strength, duration, gradualness and determination (Волкова, 2003). Attention must be paid to the child's physical condition. Proper breathing is possible if you have the correct posture, which depends on the tone of back muscles.

Implementation of each movement act includes such arbitrary (deliberate) movement stages (according to Bernstein) as: perception and evaluation; setting task, creation of the next movement image; implementation of the preset task (according to the purpose, determine content and tools of the movement); the actual execution of the movement, regulation of the movement's tone and coordination (Микляева, et al., 2006). These stages constitute a basis for action, overall development, small (hand, finger) movements, articulation, motility of facial expression, all of which are carried out in three directions: development of static coordination, development of dynamic coordination and development of movement memory. For the development of static coordination of movements exercises for the development of support and balance ability in music (speech) (to uphold the posture according to musical or speech accompaniment interruption/beginning) are used. The development of overall motor coordination is carried out by means of specially created exercises and games which considerably impact the body. Movement series of 3–5–8 are used. The sequence exercises is carried out passively, passively/actively, actively (Волкова, 2003). At first, only accompanied by music, later to the accompaniment of speech. Exercises which consist of sequentially repetitive series are chosen for the development of movement memory, whereas for the development of psychomotor characteristics games together with the development of breathing and voice functions, the development of the sense of rhythm (repetition of rhythm, rhythm changes, rhythm contrasts: according to strength and speed, type of movement, involvement of the different muscle groups) are used. The development of finger muscles constitutes a necessary component of each rhythmic lesson. The three previously mentioned directions are also needed. It is possible to manipulate with the hand or with different objects. For the development of motor articulation, we use lips, tongue, jaw movement (rhythmically, counting, accentuating, with music accompaniment) exercises. Afterwards, these exercises can be combined with movements of different body parts (open the mouth and stretch your hands etc.).

Development of rhythmic abilities in children

Many Russian researchers who deal with the problem of rhythm note motor nature of the sense of rhythm and believe that various muscles tension (shrinkage) of the tongue, jaws, toes, breathing muscles is a necessary condition of rhythmic experience (Микляева, et al., 2006). Thus, movement modelling should be considered the main mean of development of rhythmic ideas during rhythmic lessons. The management of rhythmic

standards by means of movement modeling promotes the development of children's space and time, their visual/motor coordination, emotional development and will perception field. Consideration of the syncretic nature of rhythm which is based on mutual sensory links allows for the formation of speech rhythm in order to correct weak areas in preschool pupils. The rhythm is based on the formation of correct speech and its perception. The ability to reproduce various rhythms correctly promotes adequate reproduction of word rhythm. The teacher has to understand that the sense of rhythm is primarily the perception of time proportions and their representation in the speech. Orientation onto external rhythm constitutes one of the directions according to which the development of the sense of rhythm is effected. This means that preschool children learn to subordinate their movement tempo to music and speech (Волкова, 2003). Children and teachers strengthen rhythmic exercises with spoken text at a different rate, which reflects the diverse nature of music and movement. Properly organised development of the sense of rhythm in children helps to learn not only the basic rhythmic structures, but on its basis helps to build preconditions for management of the speech phonetic area (verbal rhythm structure, words and logical accent, modulation, pauses). In all activity types, the child is taught to listen to the volume, timbre and height of voice in order to perceive its emotional tone. In this activity, not only the child's sense of hearing, but also visual, muscular, resonations and tactile sensations become activated. In such way a significant improvement of proprioceptive sensitivity in all parts of speech and movement analysers is achieved and reverse connection, control functions, and voice supply programming and control, generally speaking, efficiency increases (Волкова, 2003). The child learns to imagine himself rather than follow the correct standard executed by such carriers as rhythm teachers, teachers, speech therapists. It produces it in real time and tries to act, to move and to speak better than he is really capable of, thus increasing the bar for potential possibilities.

Discussion

Is the usage of logorhythmics necessary as support method or independent session in speech therapy?

Do logorhythmics and rhythmic sessions facilitate the development of a child in holistic aspect?

Conclusions

1. Logorhythmics is a system which has its tasks, methodological base, theoretical base and it follows definite principles.
2. Logorhythmics is a system which can be used as a method of intervention in speech therapy in a supportive way or as separate occupations.
3. Logorhythmics affects a person's physical, moral, intellectual and aesthetic education and rhythm, influences various acute disorders in psychophysical sphere.
4. Rhythm constitutes a basis for the formation of correct speech and its perception; the ability to reproduce various rhythms correctly promotes adequate reproduction of word rhythm.
5. Rhythmic lessons help to discover creative abilities in children.

References

- Бернштейн, Н.А. (1990). *Физиология движений и активность*. Москва: Наука.
- Бернштейн, Н.А. (1991). *О ловкости и ее развитии*. Москва: Физкультура и спорт.
- Микляева, Н.В., Полозова, О.А., Родионова, Ю.Н. (2006). *Фонетическая и логопедическая ритмика в ДОУ: пособие для воспитателей и логопедов*. Москва: Айрис-пресс.
- Lūse, J., Miltiņa, I., Tūbele, S. (2012). *Logopēdijas tterminu skaidrojošā vārdnīca*. Rīga: RaKa.
- Волкова, Г.А. (2003). *Логопедическая ритмика*. Москва: Владос.
- Выготский, Л.С. (2003). *Основы дефектологии*. Санкт-Петербург: Лань.
- Выготский, Л.С. (2005). *Психология развития ребёнка*. Москва: Эскмо.