

Possibilities of Logorhythmics in the Development of Preschoolers with Mental Retardation

A.Y. Lakhtin¹, S.V. Shmeleva^{1*}, A.A. Gulyaev¹,
A.N. Vakulenko¹ and N.V. Logachev²

¹K.G. Razumovsky Moscow State University of technologies and management (the First Cossack University) RAZUMOVSKY MSUTM (FCU), Moscow, Russia.

²FGBOVO State University of Management (GUU), Moscow, Russia.

*Corresponding author E-mail: ilmedv1@yandex.ru

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Modern science is actively studying developmental disorders in preschool children with mental retardation. Many mechanisms for the formation of mental retardation in preschoolers have been elucidated. It is recognized that the preschool age is most favorable for the successful correction of the development of such children. Considering that the general development is directly related to the level of speech formation and the mental activity, it was decided to evaluate the corrective possibilities of logorhythmics in children with mental retardation. To assess the developmental characteristics of such children, a set of complementary research methods was applied in dynamics. It includes: the "House" method, the method of studying the sound-absorbing side of speech, the method of studying attention "Find the difference", the method of studying thinking "Understanding pictures with hidden meaning", the method of researching the level of vocabulary development and general awareness "Show and tell". The author's logarithmic correctional program showed its advantages in comparison with the traditional correction in relation to the development of personal, intellectual and speech development in children with mental retardation. This was confirmed during the comparison of the results of correction in the experimental and control groups, which proved that logopedicrhythmics is the preferred means of enhancing development in preschool children with mental retardation.

Keywords: children, mental retardation, speech, development, logorhythmics.

Recently more and more attention of researchers has been attracted by violations in various regulatory systems of the human body^{1,2}. In this regard special meaning is attached to the development of effective approaches to the correction of various disorders, allowing to achieve the most complete recovery^{3,4} and human social integration^{5,6}. Very important for modern science and practice is the development of effective options for the rehabilitation and integration

into preschool children society suffering from various somatic^{7,8} and mental disorders⁹. Modern researchers are particularly attracted in this regard by mental retardation due to its frequent occurrence in developed countries^{10,11}. It is noticed that this state is capable of leading to strong violations of the main components of the linguistic system, leading to a weak formation of speech, psychomotor processes^{12,13}. It is known that about 27% of children 5-6 years old have problems with speech,

which subsequently negatively affect their overall development and the quality of their life at an older age. So in the absence of timely correction, these children most often have at least problems in their learning process on school¹⁴.

The question of the need for learning and development of children with a violation of intellectual development was formed long time ago but remains relevant to this day^{15,16}. Aspects of mental retardation began to be actively explored in the 1950s and 1960s. It was found that the mental development of children with pathology is most often the same as for healthy ones¹⁷. However they have significantly reduced cognitive activity and processing information is difficult^{18,19}. It becomes clear that the options for the correction of the development of preschool children with mental retardation need further improvement²⁰. In previous works logorhythmic showed good results in correcting development in different categories of children²¹. In this regard it seems promising to evaluate its capabilities in correcting the development of speech in children with mental retardation.

Purpose of the Study

To evaluate the effectiveness of using logorhythmics for the development of preschool children with mental retardation.

MATERIALS AND METHODS

The conducted research has been approved by local ethical Committee under K.G. Razumovsky Moscow State University of technologies and management on the 15-th September 2016 (protocol No. 9).

The experiment was conducted on the basis of a kindergarten 787 combined type Moscow.

The study took 50 children 6 years old (average age $6,1 \pm 0,3$ years) with mental retardation, who attended the correctional group of this kindergarten. The children were randomly divided into 2 groups - experimental and control.

The experimental group consisted of 25 children with mental retardation: 12 girls and 13 boys. To correct their condition, we applied the author's correctional and developmental program. Classes were held in group form three times a week after lunch. The duration of one class is 20-30

minutes. Each lesson consisted of three parts: the introductory part, the main part and the final part²². The approximate thematic plan of the author's classes is given in table 1.

The control group also consisted of 25 children with mental retardation: 13 girls and 12 boys. Correction of the condition of children in the control group was carried out in the traditional way²³.

The method of estimating spatial perception and memory is the House method^{24,25}

The research method allows assessing the ability of preschoolers to write and reproduce a complex sample.

Equipment: a sample with the image of a house, a sheet of blank paper and a simple pencil.

The course of the event: Children are invited to redraw the picture.

Instruction: there are pencil and blank sheets of paper before children. We need to ask them to redraw the picture (in front of a group of children the image of our house is displayed on the projector). Ask the children carefully and without haste to try to make their drawings as similar as possible to what they see. If something does not work out, tell them not to try to erase it with an eraser or a finger. It is necessary side by side or over the top to draw correctly. In the process of completing the assignment you should pay attention to what kind of hand children hold pencils, how often they look at the sample, check their work with it for a long time or reproduce the drawing from memory, draw slowly or quickly, ask questions. After the children finish drawing, you need to ask them to double-check whether they have everything correctly. If suddenly one of the children sees inaccuracies in his drawing, they are allowed to correct these inaccuracies, but the fact of the corrections must be recorded by the experimenter.

Processing Results

4 points – there is no detail. The figure may not have a fence, pipes, roofs, windows;

3 points – if the testee undergoes a significant increase in any part of the drawing, while the drawing as a whole remains the correct size;

2 points – in the case when the testee did not correctly depict any part of the drawing, for example a smoke ring or shading on the roof;

1 point – if one part of the smoke rings is drawn

correctly and the other part is not, the same is true for fence and shading.

The method of studying the sound-speech side of speech²⁵

The research method allows to estimate the pronunciation of consonant sounds in isolation during phrasal speech.

Equipment: stimulus material in pictures. Syllables and words that include the sounds studied.

The course of the event: Children are offered to name pictures and repeat phrases and words after the teacher. A - isolated pronunciation; B - in the word; B - in the sentence; G - in speech. The data obtained are recorded in a table (see .pr.3), after which a ball score of a sound pronunciation is given.

Processing Results

- 5 points - all sounds are pronounced correctly;
- 4 points - one or two sounds are not pronounced well;
- 3 points - the pronunciation suffers no more than five sounds;
- 2 points - bad pronunciation of not more than ten sounds;
- 1 point - the pronunciation of more than ten sounds suffers

The method of studying the level of mastery of the dictionary “Find the difference”²⁵

The method allows you to identify the level of attention and the level of mastery of the dictionary, the accuracy of word usage, the use of different parts of speech.

Equipment: Stimulus material in pictures.

Progress: Children are asked to compare two pairs of pictures with each other. To complete the task is given four minutes.

The instruction: “Answer the question, what is the difference?” There are ten differences in the first pair of pictures, seven in the second. During the method, the frequency and level of use of different parts of speech is recorded when describing differences in the figures.

Processing Results

- 16 and more points - high level - the child understands the task, actively uses adjectives, verbs and nouns when describing differences;
- 15-13 points - above average;
- 12-8 points - an average level;
- 7-4 points - below the average level;

0-3 points low level.

The method of studying the level of coherent speech formation “Understanding of paintings with a hidden meaning”²⁵

The method allows to identify the level of ability to analyze the situation and the ability to independently communicate.

Equipment: Stimulus material in pictures, which depicts sequential situations.

The course of the event: Children are handed out the pictures and ask them to decompose in such a way that the story would turn out.

Instructions: “Spread the pictures so that would have turned the story.” In the case when the child makes a mistake, you should ask him leading questions in order to convey the plot meaning. It happens that such help is not quite effective, then you should start telling that the children in the process of the story could understand and correct their mistakes.

Processing Results

- 4 points - the testee was able to decompose the pictures in the correct order and compose a story on them;
- 3 points - if the testee has correctly laid out the pictures, but it is difficult to compose a story on them, it is easier for him to get his bearings when he is helped;
- 2 points - the subjects can describe the fragments of individual pictures, but they fail to reproduce the full story, the teacher’s help is not effective for them;
- 1 point - the subject could not understand what the task was.

The method “show and name”²⁵

The method makes it possible to identify the general awareness of the child and the level of development of the dictionary.

The course of the event: put sheets of pictures in front of the child, then they give him questions and offer to find an answer to them by studying the pictures:

- Show and name, that grows on a garden bed?
- Show and name, who treats children?
- Show and name what grows on a tree?
- Show and name, who works in the store?
- Show and name a pet.
- Show and name who cooks dinner?
- Show and name a wild animal.
- Show and name, who flies?

- Show and name what grows in the forest?

Instructions: “Look closely at these pictures. Now I ask you questions, and you have to show the picture you want. “

Processing Results

3 points (high level) - the child answered all the questions correctly.

2 points (average) - the child answered 4-5 questions correctly.

1 point (low level) - the child practically did not understand the instructions and answered correctly less than half the questions.

The results were processed by Student’s criterion (t). Statistical processing of received

information was made with the help of a programme package “Statistics for Windows v. 6.0”, “MicrosoftExcel”. Differences in data were considered reliable in case of $\delta < 0.05$.

RESULTS AND DISCUSSION

The results of the children examination of the experimental and control groups according to the applied methods are presented in table 2.

Based on the data obtained using the “House” method, it can be said that in the outcome of both children groups, the development of voluntary attention was similarly very low. At

Table 1. Thematic lesson plan

No class	Class content	Duration of class	Methodical support
1	Exercise 1. «Sivka-burka». Exercise 2.«Howhareandouzel harvest».	25 min	Scenery autumn forest, music from the play “October”, toy blocks with letters. Drawn: thrush, hare, squirrel, phonogram of a lullaby
2	Exercise 1. «Visiting the gnome». Exercise 2. «Apple» Exercise 3.«Tongue travel»	30 min	Gnome, hut, painted berries, and tree leaves. Toys: hare, apple, crow, squirrel, illustration of leaves. Music from the play “Train”, volnushka hat.
3	Exercise 1. «Rain travel». Exercise 2. «Vegetable dispute». Exercise 3. « Wand - magic wand».	30 min	Drawn: cloud, mushroom, rain, flat puddles. Drawn vegetables and fruits, music from the play «October». Masks of a hedgehog and a wolf cub, music by A. Vivaldi «Autumn».
4	Exercise 1. «The Adventures of Pinocchio».	20 min	Images of emotional states, pictures for a fairy tale.
5	Exercise 2. «Colors of autumn». Exercise 1. «Cat,rooster and fox». Exercise 2. «Santa Claus built a house».	20 min	Mask of a hedgehog, illustration “Autumn”. Toy cat, fox and metallophone. Christmas tree, house, Santa Claus, hare, fox and bear.
6	Exercise 1. «Why does a polar bear have a black nose?». Exercise 2. « Snowman on the Christmas tree»	30 min	Instruments: tambourines, triangles, metallophone Tambourines, Christmas tree, toys.
7	Exercise 1. «Snowflake Travel».	20 min	Fox, squirrel, apple, large snowflake.
8	Exercise 1. «geese and swans»	30 min	Flanelegraf, river images, owl mask, apple tree.
9	Exercise 2. «I want to become an astronaut» Exercise 1. «Who to be?» Exercise 2. «Where did the whale have such a pharynx?» Exercise 3. «Space adventure».	40 min	Pictures on the theme of space and the ball. Images of people of different professions. Images of different fish.
10	Exercise 1. «Bun» Exercise 2. «The story of how the gnome made the house»	25 min	Toys: cat, bird, rocket Illustrations: bun, cloud, bunny and rooster. Images for flanlegraph: bug, gnome, ant, spider, squirrel, bee.

the beginning of the study children could hardly concentrate on completing the assignment for a long time. Many of them also suffered from the level of development of fine motor skills which is very important for learning to write. In the process of completing the assignment almost all the children long checked their work with stimulus material^{26,27}.

When analyzing and evaluating the results of the method of studying the acoustic-pronounced side of speech, it became clear that the outcome in both groups was a comparable violation of sound reproduction^{28,29}. In most cases the pronunciation suffered from two to five sounds. Most often children mixed hissing and whistling sounds (s-sh, z-j, s-ch, s-sh), in addition some of the subjects also had a mixture of sound sounds (p-l) The pronunciation of whistling sounds in our subjects is mainly interdental, as many have observed velor pronunciation of the sound r. Rarely, but there was such a defect, as the absence of sounds³⁰.

During analyzing the results obtained by "Find the Difference" method, the outcome in both groups of the examined children revealed an average level of vocabulary mastery³¹. Surveyed during the assignment greatly distracted by extraneous sounds. They did not succeed in concentrating on the material proposed by him.

They also did not show much interest in completing the assignment. The fourth part of the testees did not understand the instructions for the task from the first time. The initial assessment of children using the method "Understanding pictures with a hidden meaning" made it possible to identify difficulties with the correct arrangement of pictures and drawing up a clear story on them. About 10.0% of children did not cope with the task³².

In the course of analyzing the results according to the "Show and Name" method, the outcome in the experimental and control groups three children correctly answered all the questions and coped with the task^{33,34}. The rest either answered 4-5 questions correctly, or practically did not understand the instructions or answered correctly less than half of the questions.

Thus in the outcome of children with mental retardation general awareness³⁵ and the level of vocabulary development are poorly developed³⁶. In most cases children with mental retardation did not understand the instructions and did not fully cope with the task³⁷. Many testees were able to answer only the basic and most frequently asked questions³⁸.

After assessing the initial status of children in both groups of preschool children with mental retardation, a complex of author's

Table 2. Dynamics of indicators of the experimental and control groups during the observation

Method name	Experimental group, n=25, M±m		Control group, n=25, M±m	
	Start corrections	End of correction	Start corrections	End of correction
Method "House"	3.8±0.15	1.3±0.10 p<0.01	3.9±0.17	2.2±0.24 p<0.01
The method of studying the sound-speech side of speech	3.2±0.18	4.8±0.24 p<0.01	3.3±0.23	4.1±0.30 p<0.01 p<0.05
"Find the Difference" method	8.1±0.27	14.3±0.34 p<0.01	8.3±0.31	12.0±0.36 p<0.01 p<0.05
Method "Understanding of paintings with hidden meaning"	2.5±0.12	3.7±0.25 p<0.01	2.6±0.13	3.2±0.28 p<0.01 p<0.05
Method "show and name"	1.5±0.08	2.7±0.14 p<0.01	1.6±0.09	2.2±0.16 p<0.01 p<0.05

Legend: p - the reliability of the dynamics of indicators as a result of corrective action, p₁ - the reliability of differences in the results of correction in the control and experimental groups.

correctional programs was conducted³⁹. In the control the traditional correction was applied, in the experimental group - the author's using speech therapy rhythms⁴⁰. At the end of the correction the children were again examined using the same methods that were used originally⁴¹.

Evaluating the results it became clear that compared with preschoolers from the control group, a high level of development of spatial perception and memory prevailed among the children of the experimental group^{42,43}. The results obtained after the correction show that in the sonication in children of the experimental group a more pronounced positive trend was observed⁴⁴. They have significantly improved the pronunciation of sounds⁴⁵. In addition, after the application of logorhythmics these children showed a more pronounced positive dynamics in the development of attention⁴⁶. In the experimental group the level of development of the ability to analyze situations, to realize the figurative and hidden meaning also increased more significantly. They had an increase in cognitive activity. As a result of the correction, a wider vocabulary and an increase in general awareness was observed in the experimental group. Evaluating the results, it became clear that the correction of development using speech therapy rhythm gives a pronounced positive dynamics of all considered indicators⁴⁷. It is more than traditional correction contributes to the activation of memory processes, attention, increases the level of speech development, strengthens analytical thinking and strongly stimulates the emotional sphere of preschool children with mental retardation.

Thus using speech therapy rhythmics in the process of targeted and systematic correction, higher-quality improvements in the development of preschool children with mental retardation are achieved than as a result of the use of traditionally applied correction.

CONCLUSION

Currently science has collected enough information about various disorders in the children body of preschool age with mental retardation. Many aspects of the mechanisms of development of mental retardation in preschoolers have been clarified. It is recognized that the preschool age is most favorable for the successful correction of the

development of such children. Considering that the overall development is directly related to the level of speech formation and mental activity, it was decided to evaluate the corrective possibilities of logorhythmics in children with mental retardation. To assess the developmental characteristics of such children, a set of complementary research methods was applied in dynamics. It includes: the "House" method, the method of studying the sound-speech side of speech, the method of studying attention "Find the difference", the method of studying thinking "Understanding pictures with hidden meaning", the method of researching the level of vocabulary development and general awareness "Show and tell". The author's logorhythmic correctional program showed its advantages over the traditional correction regarding the development of personal, intellectual and speech development in children with mental retardation. This was confirmed during the comparison of the correction results in the experimental and control groups, which proved that speech therapy rhythm is the preferred means increased development in preschoolers with mental retardation.

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