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ASSESSMENT OF CORRELATION BETWEEN MENTAL DEVELOPMENT PARAMETERS AND INDICATORS OF VESTIBULAR STABILITY OF PRIMARY SCHOOLCHILDREN WITH MENTAL RETARDATION IN ADAPTIVE PHYSICAL EDUCATION

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Abstract. The article deals with the search for effective methods of providing timely correctional assistance to primary schoolchildren with mental retardation. This category is the largest and most heterogeneous group of children with learning difficulties. The authors believe that the experience of working with abnormal children, already accumulated in the field of neuropsychology, neurology, psychology, defectology, speech therapy, etc. can and should be used in adaptive physical education of primary schoolchildren with mental retardation. We consider the parameters of vestibular stability in correlation with the mental development of children. The results were obtained that allow stating the relationship between the parameters of mental development and the indicators of vestibular stability of younger schoolchildren with mental retardation. Effective vestibular function improves brain efficiency and reduces behavioral and learning problems.

Keywords: primary schoolchildren with mental retardation, mental development, vestibular stability.

Introduction

A particularly relevant, fundamental coordinating capacity of a person in the process of controlling motor activities is vestibular capacity (sustainability). One of the common causes of learning difficulties in children with mental retardation is dysfunction of the vestibular system and subcortical sections of the brain. Without timely correction, this will constitute a

barrier to effective learning and the success of the child. It is scientifically proven that the use of specially selected coordination tools has a positive impact on the development of the mental processes of children, including those with developmental disorders [1]. This is what we have focused our research on in the area of adaptive physical education.

Methodology and organization of the research

Our study was carried out in schools of Volgograd with students of the 3rd grade (9-10 years) who have the decision of the psychological-medical-pedagogical commission with recommendations for teaching on the educational program of AGEP FSES PGE, options 7.1 and 7.2. Eighty people (40 boys and 40 girls) [3] were examined. A correlation analysis was conducted (on Brave Pearson) on the basis of data from a recognition experiment that revealed the mental development characteristics and indicators of vestibular resistance of primary schoolchildren with mental retardation to determine the relationship between the parameters being studied and to identify those indicators of mental health that are directly related to those that characterize the vestibular resistance of primary schoolchildren with mental retardation.

Research results and their discussion

A statistical analysis was made between mental development and vestibular resistance. The following tests were chosen to determine the vestibular stability: Phirileva test, going 1 m straight after three rolls forward; distance throwing; dynamic balance testing: bench balancing (P. Hirtz), gymnastics bench turns (P. Hirtz); static balance testing: Romberg test and Yarotsky test. The results of the statistical processing are presented in tables 1 for girls and 2 for boys.

Table 1 - Levels of correlation between mental development parameters and vestibular resilience indicators of primary schoolchildren with mental retardation (girls).

Indicators	Attention	Thinking	Memory	Perception	Imagination
Phirileva test	0,4	0,1	0,3	0,2	-0,2
three rolls forward	0,3	0,1	-0,1	0,3	-0,1
distance throwing	0,2	0,0	0,0	-0,1	0,0
bench balancing	0,0	0,3	0,1	-0,1	-0,1
gymnastics bench turns	0,3	0,0	0,2	0,0	0,3
Romberg test	0,2	-0,1	-0,1	0,4	0,1
Yarotsky test	0,2	0,1	-0,1	0,3	-0,1

Note– for n = 40, $r_{кр}$ = 0,273 at P < 0,05

Tabular analysis shows that girls have the most significant, statistically reliable relationships, present with cognitive processes such as attention and perception: in the Phirileva test, 1 m straight after three rolls forward, turns on a gymnastic bench, Romberg test, Yarotsky test (from 0.3 to 0.4). A moderate correlation is also present in the execution of: balancing on a gymnastic bench with thinking, Phirileva test, turns on a gymnastic bench with imagination. The analysis of the relationships of long-range throwing with all mental development parameters has not been as significant.

Table 2 Levels of correlation between mental development parameters and vestibular resistance of primary schoolchildren with mental retardation (boys).

Indicators	Attention	Thinking	Memory	Perception	Imagination
Phirileva test	0,3	0,2	0,4	0,3	-0,1
three rolls forward	0,3	0,0	0,1	0,2	-0,2
distance throwing	0,3	0,1	0,3	0,1	0,1
bench balancing	0,2	0,1	0,0	-0,2	-0,2
gymnastics bench turns	0,1	0,2	0,1	0,0	0,2
Romberg test	0,3	0,2	0,0	0,3	0,0
Yarotsky test	0,3	0,1	0,3	0,2	-0,2
Note– for n = 40, $r_{кр}$ = 0,273 at P < 0,05					

Tabular analysis shows that boys have the most significant, statistically reliable relationships with cognitive processes such as attention and memory: when performing the Phirileva test, 1 m straight after three rolls forward, distance throwing, Romberg test and Yarotsky test. Also, a moderate correlation of perception is present in the Phirileva test, and Romberg test. Analysis of correlations of values in performing balancing and rotations on a gymnastic bench with all parameters of mental development has proved to be of little importance.

Conclusions

The results of the study confirm the indisputability of corrective work to increase vestibular stability as a means of stimulating the development of brain structures and forming the intellectual sphere of primary schoolchildren with mental retardation. By developing vestibular stability, we can create the preconditions for grading the violations of the mental parameters of children with mental retardation.

References

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