





## Special Running Exercises in Track and Field Athletics Training Program for Pupils with Special Needs

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### ABSTRACT

**Purpose:** to define influence of special running exercises on pupils with special needs for increase in the level of their mastering running movements.

**Material:** 18 pupils of the Municipal institution "Bohodukhivskiy special teaching and educational complex" of Kharkiv regional council participated in the research. 8 pupils at the age of 9-10 years, 10 pupils at the age of 13-15 years with deviations in intellectual development who are engaged in the sports section "general physical training" took part in the experimental work. The developed and used complex of special running exercises in the experiment in special general educational institution was based on a basis of scientific publications, personal experience, poll of physical culture teachers which have experience with the appropriate level of physical development and physical fitness of mentally retarded pupils.

**Results:** application of special running exercises in trainings with sportsmen who have deviation of mental development promoted mastering of skills in sprint, correct statement of foot, position of a trunk and work of hands at run. The number of repetitions and the corresponding distance of special running exercises of sprint of the training program in track and field athletics are experimentally defined. The eight-week track and field athletics training program, duration time till two hours for sportsmen with deviation of mental development is implemented. Studying the correct running movements during performance of running special exercises and gradual preparation of the musculoskeletal system for physical activity promoted improvement of test sports indicators in speed and dexterity of pupils of the sports section. The recommendations for physical culture teachers, which are directed to training for pupils with special needs which consider emotional state, physical fitness of persons with different deviations, developed.

**Conclusions:** application of the right choice of special running exercises when mastering the technique of sprint of mentally retarded pupils creates conditions to the improvement of sports indicators in speed and dexterity. The recommendations are offered to physical culture teachers, which allow giving trainings taking into account specific features of psychophysical development of pupils with special needs.

### Introduction

The analysis of the training programs in track and field athletics for sportsmen with deviation of mental development confirmed the assumption about existing shortcomings of a part of programs in them for sportsmen which

have no skills of this sport and were never engaged in it. Training programs are calculated on the improvement of sports results and don't consider assimilation of the minimum skills on track and field athletics and admission before participation in competitions [18, 22].

The effective solution of this problem is using the special running exercises which are applied to assimilation of running movements, correct statement of foot, position of a trunk and work of hands in programs of track and field athletics.

Run is the most natural form of physical exercises. Correct and rational run is necessary for overcoming a distance and increase in sports result [8]. Special running exercises are applied to correction of mistakes in running technique. Special running exercises are used for correction of mistakes in separate movements of a running step which influence assimilation of separate phases of run. Therefore, assimilation of the minimum skills by means of special running exercises allow to avoid mistakes in run at the initial stage of trainings [15, 16].

Thus, special running exercises reproduce motor structure of run and are brought closer to run in its direct parts by dynamics of movements [12].

Special running exercises that approach run most all (crossover side steps, run with shin throwing, run on straight legs, run backward, jogging, run with high raising of a hip, run by pushes, jumps from foot to foot, jogging, hopping, but other) promote, first, formation of running technique, secondly, aimed at the development of necessary physical qualities of pupils. Also, special running exercises are the main mean of preparation of the musculoskeletal system for the main part of training [19].

The observations, which were made with pupils of the Municipal institution "Bohodukhivskiy special teaching and educational complex" of Kharkiv regional council are opened by a number of problems of the pupils connected with features of physical fitness with different degree of deviation of health status. The problem consists in coordination abilities of pupils with special needs – they are balance, motility, excess slackness, rhythm of movements and another. Preparation of the musculoskeletal system for physical activity is of great importance when scientists carry out with satisfaction, perceiving performance of exercises without psychological load. Running coordination abilities intensively develop when material moves in an informative context of assimilation during track and field athletics trainings which gives the chance to compensate shortage of movements. The task of the teacher consists in definition, with the considerable list of special running exercises, those exercises which will promote effective manifestation of coordination abilities of pupils with defects of intelligence.

The analysis of scientific and methodical literature allows establishing the fact that recently domestic and abroad authors in their works even more often consider the question of physical education of pupils who have deviation in physical and mental development. Indicators of physical development which indicate the need of accounting the individual data when determining the level of physical fitness of pupils are proved in the researches of Bondar I.R. Such approach allows differentiating the process of trainings during physical education classes and work of sports section. Special attention has to be paid diagnostics of psycho-emotional state of pupils [2].

Using different means of physical education for pupils with special needs are considered in researches of scientists: means of gymnastics, ski preparation, swimming, basketball, – A.G. Karabanov, 2000; outdoor and sports games – A.V. Tsios, 2002; development of the program of physical rehabilitation - N. Ye Mikhaylova, 2005; structure and contents of training programs of the Special Olympic Games in track and field athletics – Yu.A. Briskin, 2008; changes of motor preparedness and space orientation of pupils with physical defects – I.P. Pomeschchikova, 2010; track and field athletics training program for sportsmen with deviation of mental development O.O. Pavlos (2012); development of the differentiated program of physical rehabilitation – Ye. Labkovsky, 2013 [5, 17, 21, 23, 24, 29].

However, authors only fragmentary light need of using supportive means of physical education for pupils with special needs, stating improvement of physical development and physical efficiency as a result of physical exercises.

For this reason the task of our research became definition of sports training of the special running exercises at the initial stage which are directed to correction of running movements.

Different means of physical education, which specifically influence body state, are noted in researches of Sheptytskyi [26, 27].

Thomas E. B.(1993), V.N. Mashkov (2008), Fallen N.H. (2008), Gogin O.V. (2010), Ilyin E. P. (2011) note features of influence on higher nervous activity of sportsmen with disturbance of mental development, specify that influence isn't limited only to the motor sphere, but also concerns mental processes [7, 9, 11, 17, 26, 30]. V. Heyward, B. Massey consider communication of coordination abilities of children with limited opportunities and physical activity [9].

The content of out-of-class forms of work by physical culture and sport is given in the training program of Bobrenko I. V.: morning hygienic exercises; practices in sports and recreational sections; participation in sports-recreational and sports-mass actions [1].

The developed and introduced complex of special running exercises in special general educational institution is based on a basis of scientific publications, personal experience, poll of physical culture teachers what informed in the work with the appropriate level of physical development and physical fitness of mentally retarded sportsmen. The selection of special exercises was carried out on the basis of poll of track and field athletics coaches, results of the search experiment. The set of exercises of different orientation was created. The experiment was made according to contents of the eight-week training program of track and field athletics for sportsmen with deviation of mental development (the author's program of Pavlos O.O.) [23].

Sportsmen of track and field athletics section acquired the volume of special exercises which first stage was the introduction of the special running exercises systematized by the author. Fixing and evidential base occurred at the second stage – fixing of sports indicators of speed and dexterity.

Trainings were held under the supervision of the teacher on three trainings for a week of the eight-week training program in track and field athletics by duration till two hours at the same time duration of the main part didn't exceed 60 minutes.

Considering the recommended number of sportsmen for conducting trainings (not more than 10 persons), the teacher owed an opportunity to choose for studying and mastering this or that exercise which suits the sportsman most of all depending on his physical, emotional state, weather and specifications.

The Rules of the Special Olympic Games is regulated to resume training actions after improvement of initial previous material. Fixing of material is carried out through control of technical preparedness of sportsmen with passing test standards on high-speed abilities and dexterity.

### **Purpose, research tasks**

*The purpose of the research* – is to determine efficiency of special running exercises for pupils with special needs by the program track and field athletics that influence increase in mastering running movements.

*Research tasks:*

- 1) to define age features of assimilation of the technique of execution the special running exercises;
- 2) to exercise control of test standards on speed, dexterity, high-speed and power qualities;
- 3) to provide recommendations to physical culture teachers concerning use of special running exercises.

### **Material and methods**

*Participants.* 18 pupils of the Municipal institution "Bohodukhivskyi special teaching and educational complex" of Kharkiv regional council participated in the research. 8 pupils (4 boys, 4 girls) of the 4<sup>th</sup> grade, 10 pupils (5 boys, 5 girls) of the 8<sup>th</sup> grade with deviations in mental development which are engaged in the sports section "general physical



training" took part in the experimental work. The research was conducted on the basis of the Municipal institution "Bohodukhivskyi special teaching and educational complex" of Kharkiv regional council.

The experimental work provided realization of three interconnected stages: stating, forming and control. Pupils, who took part in the experimental work, are formed 2 groups – experimental E1 (8), E2 (10).

*Organization of the research.* The pedagogical experiment, which consisted of the following stages, was prepared and introduced for the achievement of the purpose of the work:

- creation of two experimental groups on age (the first - 9-10 year old pupils and the second - 13-15 year pupils);
- introduction of special running exercises;
- control by method of distance measurement and extent estimation of performance of participants of experimental groups at performance of training special running exercises;
- systematization and mathematical data processing;
- granting conclusions and practical recommendations.

*Such methods of the research* were used in the work: analysis and generalization of scientific-methodical literature, pedagogical observations of pupils with special needs on educational-training classes, pedagogical testing, measurement and modeling of the block of special running exercises.

For the purpose of objectification of the obtained data, all results of measurements gave in to mathematical processing with definition of the following statistics which have the widest appendix:

- 1) arithmetic average value;
- 2) mean square deviation;
- 3) error of representativeness of arithmetic average;
- 4) reliability of difference between average sizes (by the criterion of Student).

Calculations were carried out by means of package of the statistical programs Statistika 5.11, Excel.

The inspection of normality of distribution of data in the studied groups by means of the criterion of Kolmogorov-Smirnov was carried out before use of the t-test. The reliability was considered as essential at five percent significance value ( $p < 0,05$ ), 1% - significance values ( $p < 0,01$ ) and 0,1% - significance values ( $p < 0,001$ ).

#### *Statistical analysis*

Calculations of results were carried out by means of package of the statistical programs Statistika 5.11, Excel. The inspection of the t-test of normality of distribution of data in the studied groups is carried out by means of the criterion of Kolmogorov-Smirnov. The compared analysis is presented in the table 1.

### **Results of the research**

The scientific observation of this research was made in the presence of the system of methods and techniques that provided objectivity of the experiment performance. Using the experience of conducting track and field athletics trainings with the pupils, which are carried to the main medical group and the conducted earlier researches [3, 17, 21], was carried out the analysis of the special running exercises used on track and field athletics classes. By the results of the made pedagogical observations, the wide arsenal of special running exercises was analyzed and defined the complex of the running exercises for carrying out the experiment for the direct application with this contingent of pupils who are engaged in sports sections [22, 23].

Considering the initial preparation and physical state of participants of the experiment, the number of meters, when performing exercise, made 20 and 40. The intensity of exercises in the complex wasn't considered. The attention when performing exercises by the teacher focused on the correct performance of exercise and desire to repeat exercise at the next running. Exercise were divided on the content - crossover side steps: by the left side, by the right side, run with shin throwing, run on straight legs, run with high raising of a hip, run backward, jogging, speed-up. Also it should be noted that the number of repetitions was carried out after full recovery and at the request of the pupil.



The offered list of special running exercises for the individual preparatory part of track and field athletics classes made the forecast for mastering skills of performance of running movements and material digestion of the program of track and field athletics by pupils. Compliance of kinematic, dynamic and rhythmical structure of the main exercise, that is to say run, has to be selection criterion of exercises for the complex of special running exercises. Special running exercises were carried out on alternating with walking.

The purpose of the first stage of the experiment consisted in certain spacing of a distance for effective implementation of the special running exercises. Let's note that the number of special running exercises in one training depend on functional and psychological state of those who are engaged. The final part of special running exercises in the preparatory part of training is run with speed-up which indicates the preparedness level for performance of high-speed work or taking of speed tests.

Physical culture teachers, when training, have to consider emotional state of pupils, physical fitness of persons with different deviations and remember that the weak link is coordination abilities: balance, thin motor activity, relaxation, rhythm of movements and another. It is possible to compensate shortage of movements through development of abilities at the dosed repetition of running movements. Persons with defects of intelligence demand study of movements which demand manifestation of coordination abilities.

The moment of the sequence of performance of exercises is very important in the preparatory part of track and field athletics class: first of all it is necessary to execute warm-up, slow run, then general-developing exercises and only after that start special running exercises of the athlete. It is connected with the fact that special running exercises demand of active work and big muscular tension from the musculoskeletal system and therefore, they are carried out only after careful previous stretching. Exercises of smaller intensity are carried out at first, and then gradually, depending on preparedness of muscles, it is possible to include exercises of bigger intensity. Or at first we can carry out exercises in half speed, and then gradually increase their intensity.

Table 1. Comparative analysis

Exercises	Number of repetitions	Distance	Performance extent of group E1 (n=8)	Performance extent of group E2 (n=10)
crossover side steps: by the left side by the right side	4	20 m	80%	86%
	4	40 m	66%	74%
	4	40 m	82%	86%
run with shin throwing	4	20 m	68%	74%
	4	40 m	60%	63%
run on straight legs	4	20 m	74%	73%
	4	40 m	78%	83%
run with high raising of a hip	4	20 m	54%	54%
	4	40 m	90%	83%
run backward	4	20 m	86%	77%
	4	40 m	70%	73%
jogging	4	20 m	54%	58%
	4	40 m	80%	83%
speed-up	4	20 m	84%	86%
	4	40 m	82%	84%
			78%	78%

The experiment, which is made with the purpose to investigate correctness and performance extent of special running exercises by pupils, indicates that the distance in 40 m doesn't give the chance to concentrate attention of the teacher to the technique of exercise execution in the majority of special running exercises of E1 group (the 4<sup>th</sup> grade) and E2 (the 8<sup>th</sup> grade). The exception was made by jogging.

Special running exercises crossover side steps haven't essential difference between run by the right and left sides of E1 and E2 group.

The difference of exercise crossover side steps and run with shin throwing makes 16% in E1 and 15% in E2.

The greatest difference in the overcome distances of 40 m and 20 m made 24% in E1 and 29% in E2 in run on straight legs.

Run with high rising of a hip didn't express complications where the difference makes 4-6% and rather high percent of performance 90% and 83%.

The exercise difference run backward makes 14% in E1 and 12%, 10% in E2.

The conducted research on extent estimation of performance by participants of experimental groups of training special running exercises indicates a distance optimum for performance of exercises not more than 20 meters.

Table 2. The main indicators of track and field athletics exercises of pupils of the fourth class ((E1) after introduction of the program) ( $q=0.05$ ).

Indicators		The contingent of the examined children				$t_c$	$t_{cr}$	Result of comparison $t_c > t_{cr}$	Difference between average indicators
		Before the experiment n=8		After the experiment n=8					
		$\bar{X}_1$	$m_1$	$\bar{X}_2$	$m_2$				
Standing jump, pushing away by two legs (cm.)	Boys n=4	130	2,35	145	2,35	4,51	2,45	$t_c > t_{cr}$	significant
	Girls n=4	121,25	1,44	132,5	1,66	5,13			
Shuttle run 4x9m.	Boys n=4	14,7	0,105	14,27	0,08	3,24	2,45	$t_c > t_{cr}$	significant
	Girls n=4	14,6	0,094	14,25	0,11	2,4		$t_c < t_{cr}$	insignificant
Crouch start 30m. (sec.)	Boys n=4	7,475	0,128	7,1	0,105	2,34	2,45	$t_c < t_{cr}$	insignificant
	Girls n=4	7,975	0,098	7,625	0,072	2,91		$t_c > t_{cr}$	significant
Run 30m. from high start (sec.)	Boys n=4	7,675	0,055	7,3	0,066	4,41	2,45	$t_c > t_{cr}$	significant
	Girls n=4	8,2	0,094	7,275	0,055	8,56		$t_c > t_{cr}$	significant
Run 60m (sec.)	Boys n=4	12,275	0,128	11,97	0,098	1,87	2,45	$t_c < t_{cr}$	insignificant
	Girls n=4	13,25	0,11	12,52	0,055	5,89		$t_c > t_{cr}$	significant

The results of the conducted research demonstrate that average indicators of standing jump, pushing away by two legs significantly improved at boys of the 4<sup>th</sup> grade, because  $t_c = 4.51$  is more than  $t_{cr} = 2.45$ . So, average group indicators of standing jump, pushing by two legs at boys of the 4<sup>th</sup> grade make – 130 cm before carrying out the experiment, and after – 145 cm. The obtained data demonstrate however that average indicators of shuttle run 4x9m significantly improved at boys of the 4<sup>th</sup> grade, because,  $t_c = 3.24$  is more than  $t_{cr} = 2.45$ . So, the average group indicator was – 14.7s before carrying out the experiment, and after – 14.27s. Also run indicator on 30 m from high start improved authentically, because  $t_c = 4.41$  is more than  $t_{cr} = 2.45$ .

The data are provided in the table 2. demonstrate that there isn't essential difference between average group indicators of run from crouch start on 30 m at boys of the 4<sup>th</sup> grade after introduction of the comprehensive program,

because  $t_c = 2.34$ , and  $t_{cr} = 2.45$  (tab. 2.). The same feature was shown also when comparing average group indicator of run on 60 m at boys of the 4<sup>th</sup> grade ( $t_c = 1.87$  is less than  $t_{cr} = 2.45$ ).

The results of the conducted research demonstrate that average values of standing jump significantly improved at girls of the 4<sup>th</sup> grade before and after the experiment, because  $t_c = 5.13$  is more than  $t_{cr} = 2.45$ . Run on 60 m at girls, apparently from materials of the table 2, authentically grew during application of the comprehensive program. So, average group indicators at girls of the 4<sup>th</sup> grade made – 13.25 s before carrying out the experiment, and after – 12.52 s. The results of run on 30 m from crouch and high start improved authentically at girls, because  $t_c$  is more than  $t_{cr}$ . So, average group indicators of run from crouch start of 30 m make at them – 7.97 s before carrying out the experiment, and after – 7.62 s. Run on 30 m from high start made– 13.25 s before carrying out an experiment, and after 12.52 s.

Table 3. The main indicators of track and field athletics exercises of pupils of the eighth grade ((E2) after introduction of the program) ( $q=0.05$ ).

Indicators		The contingent of the examined children				$t_c$	$t_{cr}$	Result of comparison $t_c > t_{cr}$	Difference between average indicators
		Before the experiment n=10		After the experiment n=10					
		$\bar{X}_1$	$m_1$	$\bar{X}_2$	$m_2$				
Standing jump, pushing away by two legs (cm.)	Boys n=5	174	2,41	178	1,58	1,38	2,31	$t_c < t_{cr}$	insignificant
	Girls n=5	160	1,76	166	2,09	2,19			
Shuttle run 4x9m.	Boys n=5	12,08	0,13	11,9	0,11	1,06	2,31	$t_c < t_{cr}$	insignificant
	Girls n=5	12,48	0,11	12,16	0,08	2,46		$t_c > t_{cr}$	significant
Crouch start 30m. (sec.)	Boys n=5	6,2	0,08	5,92	0,075	2,56	2,31	$t_c > t_{cr}$	significant
	Girls n=5	6,5	0,05	6,28	0,054	1,317		$t_c < t_{cr}$	insignificant
Run 30m. from high start (sec.)	Boys n=5	6,54	0,06	6,24	0,096	2,65	2,31	$t_c > t_{cr}$	significant
	Girls n=5	6,9	0,07	6,6	0,07	3,06			
Run 60m (sec.)	Boys n=5	10,66	0,07	10,26	0,11	3,07	2,31	$t_c > t_{cr}$	significant
	Girls n=5	11,24	0,083	10,825	0,025	4,82			

The results of the conducted research demonstrate that average indicators of run on 60 m, run from crouch and high start on 30 m significantly improved at boys of the 8<sup>th</sup> grade, because  $t_c$  is more than  $t_{cr}$ . So, average group indicators of run on 60 m at boys of the 8<sup>th</sup> grade made 10.66 s before carrying out the experiment, and after 10.26 s, and run from crouch and high start on 30 m, respectively, before 6.2 s, after 5.92 s, and 6.54 s before, and 6.24 s.

The data are provided in the table 3. demonstrate that there isn't essential difference between average group indicators of shuttle run 4x9 m at boys of the 8<sup>th</sup> grade after introduction of the program, because  $t_c = 1.06$  is less than  $t_{cr} = 2.31$ . The same feature was shown also when comparing average group indicators and long jumps with pushing away by two legs at boys of the 8<sup>th</sup> grade ( $t_c = 1.38$  is less than  $t_{cr} = 2.31$ ).

The results of the research demonstrate that there isn't essential difference between average group indicators of crouch start on 30 m and long jump at girls of the 8<sup>th</sup> grade after introduction of the comprehensive program, because  $t_c = 1.317$ , and  $t_{cr} = 2.31$ , and respectively,  $t_c = 2.19$ , and  $t_{cr} = 2.31$  (tab. 3.). The obtained data demonstrate that average indicators of shuttle run 4x9 m significantly improved at girls of the 8<sup>th</sup> grade, because  $t_c = 2.46$  is more than  $t_{cr} = 2.31$ .

So, average group indicator was – 12.48 s before carrying out the experiment, and after – 12.16 s. The results of the conducted research demonstrate that average indicators of run on 60 m from high start before and after the experiment significantly improved at girls of the 8<sup>th</sup> grade, because  $t_c = 3.06$  is more than  $t_{cr} = 2.31$ . Run on 60 m at girls, apparently from materials of the table 3, authentically grew during application of the comprehensive program. So, average group indicators at girls of the 8<sup>th</sup> grade made – 11.24 s before carrying out the experiment, and after – 10.82 s.

The repeated assessment of track and field athletics indicators was carried out at children of 4 and 8 grades after introduction of the program. The results of such assessment are presented in tables 2 and 3. It is visible from materials of the research (tab. 2.) that such indicators as standing jump and run of 30 m from high start significantly increased at boys and girls of 4 grades during application of the program. The results of the research also showed that shuttle run 4x9 m significantly improved at boys ( $t_c = 3.24$ , and  $t_{cr} = 2.45$ ). And this indicator insignificantly improved at girls. The indicator of crouch start on 30 m and run on 60 m significantly improved at girls of the 4<sup>th</sup> grade ( $t_c = 2.91$ , and  $t_{cr} = 2.45$ ), and  $t_c = 5.89$ , and  $t_{cr} = 2.45$ ).

The data are provided in table 3 demonstrates that difference in average indicators of standing jump at girls and at boys of the 8<sup>th</sup> grades is statistically insignificant after application of the program. The results of the research also showed that average group indicators of run on 30 m from high start and run on 60 m significantly increased at girls and boys. It was established at the repeated inspection that average indicator of shuttle run is insignificant at boys  $t_c < t_{cr}$ , and it is significant  $t_c > t_{cr}$  at girls of the same age. But, absolutely other situation developed with the indicator (crouch start of 30 m). Here, on the contrary, average indicator is significant at boys, and insignificant - at girls.

## Discussion

Introduction of special running exercises occurs at the close relationship of the pupil and teacher. Considering initial training and physical state of pupils has to be guided by desire and interest to participate in trainings [13,14].

Analyzing the received results, it is possible to note that the created special running exercises for pupils with special needs on the initial stage of trainings were showed in development indicators of high-speed abilities that the reliable improvement of results in sprint and dexterity testifies to.

However, the training program of track and field athletics for sportsmen with deviation of mental development has a number of shortcomings, namely: individual definition of physical activity on each pupil isn't considered, measurement of the introduced distances for special running exercises isn't investigated on the possibility degree of performance of exercise at the sufficient technological level by mentally retarded pupils. The made complex of special running exercises showed efficiency in the training process, but doesn't consider the development of other physical qualities, namely flexibility and coordination which need the person with defects of intelligence. The received results are rather new in comparison with data of literature [17, 30]. Our research showed also positive impact on the relation to study and needs constant control which is also new data in comparison with data of literature [1, 6].

In our opinion, the reasons that constrain pupils with psychophysical violations of mastering movement skills are such:

- 1) fast fatigue;
- 2) disturbance of the motor sphere which are caused by damage of the central nervous system (at mental retardation, speech defects);
- 3) sensory (at hearing, visual disorders) and physical (at disturbances of musculoskeletal system) frustration;
- 4) lack of motives, insufficient competitive practice;
- 5) low professionally and pedagogical level of teachers who can't see physical potential of pupils, aren't able to organize trainings in compliance of requirements of the Special Olympic Games;
- 6) insufficient material and technical support that affects efficiency of using modern sports base.



Pupils with psychophysical violations need the regular careful review and observation of doctors for the purpose of entering amendments into trainings.

Physical development of these pupils lags behind norm from all main indicators: constitution, height and weight, state of health, endurance, speed, flexibility, force of motive qualities, coordination of motor actions, therefore programs, methodical providing of track and field athletics of pupils of the main medical group has the differences [10, 11, 14].

The results of the research lead up efficiency of introduction of special running exercises in the educational process those increase the level mastering running movements and interest in practice of sports section. The scientific research of Briskin Yu. A. concerning structure and contents of the training program of the Special Olympic Games of track and field athletics introduced in the experiment as the stage of preparation of sportsmen for competitions and oriented on trainings taking into account the preparedness degree of pupils with special needs [4, 5, 25].

The data of the experiment of the carried-out analysis demonstrate that strategy is chosen correctly: experimental groups in results of tests improved sports indicators in speed and dexterity.

By the results of the conducted research it is possible to claim that the created special running exercises directed to mastering running skills promote increase to the level of sports preparedness.

### Thanks

The experiment was carried out according to the subject of the research work of the department of physical education and sport of Kharkiv National Automobile and Highway University for 2016-2020 on the subject "The research of efficiency of physical exercises of various orientations in groups of sports improvement in the educational process of students of KhNAHU".

### Conclusions

1. Introduction in the training process of using the special running exercises for training of mentally retarded pupils taking into account specific features of psychophysical development creates optimal conditions for their subsequent assimilation of running movements.
2. Special running exercises of the athlete are intended for statement of the running technique, development of physical qualities.
3. Special running exercises of the athlete are used in the preparatory part of classes for preparation of the musculoskeletal system for exercise stress.
4. It is important to physical culture teachers and also coaches to have the wide arsenal of exercises, to own their terminology, technique and abilities to make complexes for different classes.

Indicators of physical qualities of pupils, speed and dexterity improved after introduction of the program. So, such indicators as standing jump, and run of 30 m from high start at boys and girls of the 4<sup>th</sup> grades during application of the program.  $t_c = 4.51$ , and  $t_{cr} = 2.45$  and  $t_c = 4.41$ , and  $t_{cr} = 2.45$  are at boys, and according to  $t_c = 8.56$ , and  $t_{cr} = 2.45$  and  $t_c = 4.41$ , and  $t_{cr} = 2.45$  are at girls. The results of the research also showed that shuttle run 4x9 m significantly improved ( $t_c = 3.24$ , and  $t_{cr} = 2.45$ ). And this indicator improved at girls, but insignificantly. The indicator of crouch start on 30 m and run on 60 m significantly improved at girls of 4 grades ( $t_c = 2.91$ , and  $t_{cr} = 2.45$ m, and  $t_c = 5.89$ , and  $t_{cr} = 2.45$ ).

The results of the research demonstrate that, the indicator of standing jump insignificantly improved at girls and boys of the 8<sup>th</sup> grade after application of the program ( $t_c = 1.38$ , and  $t_{cr} = 2.31$ m, and  $t_c = 2.19$ , and  $t_{cr} = 2.31$ ). The results of the research also showed that average group indicators of run on 30 m from high start and run on 60 m significantly increased at girls ( $t_c = 3.06$ , and  $t_{cr} = 2.31$ m, and  $t_c = 4.82$ , and  $t_{cr} = 2.31$ ) and at boys ( $t_c = 2.65$ , and  $t_{cr} = 2.31$ m, and  $t_c = 3.07$ , and  $t_{cr} = 2.31$ ).

Therefore, the results of the conducted researches demonstrate the efficiency of the offered program of special running exercises at pupils with defects of mental development who study in the fourth and eighth grades of the Municipal institution "Bohodukhivskiy special teaching and educational complex" of Kharkiv regional council.

Application of the right choice of special running exercises when mastering the technique of sprint of mentally retarded pupils creates conditions to improvement of sports indicators in speed and agility. The provided recommendations to physical culture teachers allow giving trainings taking into account specific features of psychophysical development of pupils with special needs.

*The next researches* are planned to be directed to the development of the technique of mastering special exercises which are directed to flexibility and coordination of movements.

### Conflict of interests

The authors declare that there is no conflict of interests.

### References

1. Bobrenko IV. «Fizychna kul'tura» (pidhotovchyy-4 klasy) Navchal'ni prohramy dlya pidhotovchoho, 1-4 klasiv spetsial'nykh zahal'noosvitnikh navchal'nykh zakladiv dlya rozumovo vidstalykh ditey [«Physical Culture» (preparatory-4 classes) Educational programs for preparatory, 1-4 grades of special secondary schools for mentally retarded children] *Za red. Kolupayevoyi A.A., Makarchuk N.O.* – 2014. (in Ukrainian)
2. Bodnar IR, Stefanyshyn MV, Petryshyn YU.V. Otsynuyannya rivnya fizychnoyi pidhotovlenosti uchniv starshykh klasiv z urakhuvannyam pokaznykiv fizychnoho rozvytku [Assessment of the level of physical preparedness of students of senior classes taking into account the indicators of physical development] *Pedahohika, psykhohiia ta medyko-biolohichni problemy fizychnoho vykhovannya i sportu.* – 2016;6:9–18. (in Ukrainian)
3. Briskin Iy, Perederii A, Pitin M. Metodichne zabezpechennia sistemi pidgotovki sportsmeniv Spetsialnih Olimpiad [Methodical maintenance of the system of training of athletes of Special Olympiads] *Ykraiïnsku jÿrnal meditsini, biologii ta sporty.* – 2017;1(3):200–208. (in Ukrainian)
4. Briskin Iy, Pavlos O, Perederii A. Prioritetno-reprezentativni vidy sporty Spetsialnih Olimpiad v Ykraiïni [Priority-representative sports of the Special Olympics in Ukraine] *Fizychna aktivnist, zdorov'ia i sport.* – 2012;1:43–49. (in Ukrainian)
5. Briskin YUA, Perederiy AV, Slisenko OO. Struktura ta zmist trenuval'noyi prohramy Spetsial'noyi Olimpiady z lehkoyi atletyky / [Structure and content of the training program of the Special Olympics Athletics] *Pedahohika, psykhohiia ta medyko-biolohichni problemy fizychnoho vykhovannya i sportu* – KH., 2008;1:22–25. (in Ukrainian)
6. Chebotar'ova OV, Blech HO, Hladchenko IV, Trykoz SV, Bobrenko IV. Kryteriyi otsynuyannya navchal'nykh dosyahren' uchniv pochatkovykh klasiv z porushennyamy rozumovoho rozvytku [Criteria for assessing the educational achievements of elementary school students with intellectual disabilities] *K., ISP NAPN Ukrayiny,* 2016;81. (in Ukrainian)
7. Fallen NH, Umansky W. Young children with special needs New York: Macmillan, 2008;200.
8. Glukhov VI. Fizicheskaya kul'tura v formirovanii zdorovogo obraza zhizni [Physical culture in the formation of a healthy lifestyle] – K.: *Zdorov'ya,* 1989;70. (in Ukrainian)
9. Heyward V, Massey B. Static muscle performance of pre-adolescent boys Article in American corrective therapy journal 1977;31(6):165.
10. Hohin OV. Metodyka navchannya bihu [Method of running training] *Teoriya ta metodyka fizychnoho vykhovannya.* – 2010;1:19–28. (in Ukrainian)
11. Hohin OV, Petyak SV. Navchannya bihu na korotki dystantsiyi uchniv serednikh klasiv [Teaching run for short distance students of middle classes] *Teoriya ta metodyka fizychnoho vykhovannya.* – 2011;8:6–9. (in Ukrainian)
12. Hohin OV. Lehka atletyka. Navchal'nyy posibnyk [Athletics]. – Kharkiv: «OVS», 2010;395. (in Ukrainian)



13. Il'in YeP. Psikhologiya individual'nykh razlichiy [Psychology of individual differences] *SPb. Piter*, 2011;701. (in Russian)
14. Il'ina IA. Spetsial'nyye uprazhneniya legkoatleta [Special exercises athlete] *Spb.: VRU im. A.S. Pushkina*, 2013;92. (in Russian)
15. Kozina ZHL, Grin' LV, Yefimov AA. Primeneniye sistemy napravleniy, sredstv i metodov individualizatsii podgotovki sportsmenov v igrovyykh vidakh sporta v strukturnykh elementakh godichnogo tsikla podgotovki [Application of the system of directions, means and methods of individualizing the training of athletes in team sports in the structural elements of the annual training cycle] *Fizicheskoye vospitaniye studentov.* – 2010;4:45–53. (in Ukrainian)
16. Kucherenko VM, Yednak VD. Legkaya atletika [Athletics] Ternopol' *TDPU im. V. Gnatyuka*, 2001;98. (in Ukrainian)
17. Lapkovskyy E, Yaniv O. Suchasnyy stan problemy rehabilitatsiyi ditey iz zatrymkoyu rozumovoho rozvytku v umovakh spetsial'nykh zahal'noosvitnikh shkil-internativ [The current state of the problem of rehabilitation of children with mental retardation in the conditions of special general educational boarding schools] *Moloda sportyvna nauka Ukrainy L.*, 2013;17(3):156–159. (in Ukrainian)
18. Lipa VA. Osnovy korrektsionnoy pedagogiki [Basics of Correctional Pedagogy] Donetsk : *Lebid'*, 2002;327. (in Ukrainian)
19. Malone DG, Gallagher PA. Transition to preschool programs for young children with disabilities. *Journal of Early Intervention.* 2008;30(4):341–356.
20. Mashkov VN. Differentsial'naya psikhologiya [Differential Psychology] *SPb. Piter*, 2008;288. (in Russian)
21. Mykhaylova NYE, Hryhus IM. Rozvytok fizychnykh zdbnostey ditey z rozumovymy vadamy [Development of physical abilities of children with mental defects] *Moloda sportyvna nauka Ukrainy L'viv: NVF «Ukrayins'ki tekhnolohiyi»*, 2005;2:150–152. (in Ukrainian)
22. Nosko MO. Teoretychni ta metodychni osnovy formuvannya rukhovoyi funktsiyi u molodi pid chas zanyat' fizychnoyu kul'turoyu ta sportom Dokt.Diss [Theoretical and methodical basis of formation of motor function in youth during physical education and sports. Dokt.Diss] K., 2003;430. (in Ukrainian)
23. Pavlos' OO, Perederiy AV. Trenual'na prohrama z lehkoyi atletyky dlya sport-smeniv z vidkhylennyam rozumovoho rozvytku [Athletics training program for athletes with a deviation of mental development] L., 2012;52. (in Ukrainian)
24. Pomeshchikova IP. Opredeleniye sposobnosti vosproizvodit' amplitudu dvizheniya u uchashchikhsya s narusheniyami oporno-dvigatel'nogo aparata [Determination of the ability to reproduce the amplitude of movement in students with disorders of the musculoskeletal apparatus] *Fizicheskoye vospitaniye studentov tvorcheskikh spetsial'nostey Kharkiv : KHDADM (KHKHPÍ)*, 2008;3:98–105. (in Ukrainian)
25. Prystupa Y, Perederiy A, Briskin Y, Pityn M. Organizational basics implementation of the programs of Special Olympics Harvard Journal of Fundamental and Applied Studies. – 2015;1(7):266–272.
26. Sheptyts'kyy DV. Rezul'taty doslidzhennya rivnya fizychnoho rozvytku i fizychnoyi pidhotovlenosti rozumovo vidstalykh ditey molodshoho ta seredn'oho shkil'noho viku [Results of the study of the level of physical development and physical preparedness of mentally retarded children of junior and middle school age] *Pedahohika, psykholohiya ta medyko-biolohichni problemy fizychnoho vykhovannya i sportu KH.*, 2005;23:93–96. (in Ukrainian)
27. Sheptyts'kyy DV. Propedevtychna pidhotovka rozumovo vidstalykh ditey do ovobodinnya sportyvnykh ihramy Dokt.Diss [Propaedeutic training of mentally retarded children to mastering sports games Dokt.Diss] *Kirovohrad*, 2006;157–177. (in Ukrainian)
28. Thomas EB, Massey BH, Misner JE, Lohman TG. The relative contribution of strength and physique to running and jumping performance of boys 1993;32(4):7–11.

29. Ts'os' A, Hats H. Pedagogichna diahnozyka v protsesi navchannya fizychnoyi kul'tury uchniv zahal'noosvitnikh navchal'nykh zakladiv [Pedagogical diagnostics in the process of teaching physical education of students of general educational institutions] *Physical Education, Sports and Health Culture in Modern Society*, 2016;4(20):201–209. (in Ukrainian)
30. Verzhikhovs'ka OM. Osoblyvosti fizychnoho vykhovannya rozumovo vidstalykh uchniv [Features of physical education of mentally retarded students] *Sotsial'no-pedahohichna*. – 2016;26:17–26. (in Ukrainian)