

**NATIONAL SPORTS ACADEMY  
"Vasil Levski"**

***Department of Water Sports***

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**ABSTRACT**

**IMPACT OF SPORTS AND PREPARATORY GAMES IN AN  
INCLUSIVE ENVIRONMENT ON THE DEVELOPMENT OF  
STUDENTS WITH SPECIAL EDUCATIONAL NEEDS IN  
PRIMARY SCHOOL AGE**

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**Sofia` 2025**

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**of a dissertation for awarding the educational and scientific  
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The dissertation contains 152 standard pages. It is illustrated with 12 tables, 31 figures, 7 appendices and a list of references. The bibliographic reference contains 123 literary sources (96 in Cyrillic and 25 in Latin), as well as 2 websites.

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## **INTRODUCTION**

Disability is a physical or mental factor that adversely affects people's ability to participate fully in social life. Many of them are disadvantaged due to the negative impact that the disability often has on their ability to lead a normal life.

It is a well-known fact that the creation of better conditions for the inclusion of children with SEN in the educational system means increasing the opportunities of each child or young person to develop their potential, to increase the level of their intellectual development, to expand the social sphere of communication and to acquire knowledge, skills and competencies that will provide them with the opportunity to be included in society and live independently.

Before the creation of Israel, there was no central education system for the Jewish population in the country. The main political movements of that time (General Stream, Labor Movement, Mizrahi Stream (Hapoel HaMizrachi - MPFDL and Israeli Association) developed their own educational system. The concepts of equality and equal opportunities in this period did not yet exist in the educational discourse.

One of the most accessible environments for training and integration of children and students with SEN is the one that is created in physical education lessons. Through games and physical exercises, opportunities are provided for both training and expression, according to abilities and level of preparedness.

Modern trends require the inclusion of adapted physical education (AFV) as part of the comprehensive rehabilitation of students with disabilities. The implementation of motor activities in physical education classes has an extremely multifaceted impact on the child's body. Adapted physical education, which is carried out in inclusive conditions, has an extremely large impact on the development of children with SEN.

Therefore, the focus of this study is related to the possibility of developing and applying an adapted methodology for teaching physical education and sports to students with SEN from the autism spectrum in the inclusive environment of primary school.

## **I. STATEMENT OF THE PROBLEM**

### **I.1. Special education, integrated and inclusive education for adolescents with disabilities**

#### **I.1.1. Emergence and development of special education**

It has long been established that the school as a social institution and policy reproduces and often consolidates social inequalities in society, instead of eliminating them (E. R. Yarskaya-Smirnova, I. I. Loshakova, 2003). The education of each person determines his place in the social hierarchy and which has an impact on the individual's opportunities for personal prosperity, and hence on his quality of life.

This also applies to people with disabilities and, as S. Denev (2016), in the past it was considered that the special school was the best place for children and young people with disabilities to receive a good education.

The cradle of special education is **France**, where it has been implemented since the time of Napoleon. In 1908, the first law on special education was adopted in France (S. Denev, 2016).

In the 19th century, the adoption of normative acts for people with disabilities began in Western Europe. Progress in various scientific fields in many European countries led to the emergence of "schools for people with hearing impairments, blind, hard of hearing, visually impaired, deaf-blind, children with speech disorders, children with physical disabilities, children with behavioral problems, etc." (V. Alexandrova, S. Jobova, et al., 2017).

Historically, the care for children with disabilities overlapped the same model for different countries. In almost all countries, the education of children with visual impairments began first, and later children with hearing impairments and intellectual disabilities were included. Children with physical difficulties, as well as those with emotional and behavioral problems (V. Radulov, 2003; B. Peneva, 2005).

Prior to 1989 in **Bulgaria**, the right and access to school of persons with disabilities was severely restricted due to discriminatory behaviour towards them, based on prejudices and stereotypes, claiming that children with disabilities are unlearnable and should be separated from their peers. In the existing various educational institutions (auxiliary and speech therapy schools, those for children with impaired hearing or impaired vision, socio-pedagogical and educational boarding schools, health and hospital schools), in which the children were distributed, according to the nature of the disability, there was no uniform standard for complex psychopedagogical examination of these children and students (M. Nikolova, 2022).

In a study by G. Bizhkov and N. Popov (1994) it is pointed out that special schools in Bulgaria are intended for students with disadvantaged health, as well as for socially disadvantaged students. Primary education in these schools is carried out with adapted curricula and specific организация на обучението.

Until the establishment of the State of **Israel**, special educational institutions worked on a voluntary basis. About fifty years ago, the first special education schools opened in Israel, and in 1950 the Department of Special Education was opened under the Ministry of Public Education and Culture, and in fact, the two educational systems work side by side.

Until the mid-seventies, a categorical definition of people with disabilities was accepted in Israel, according to which, the defect determines the type of treatment. This definition ignores the great difference between children and emphasizes what they have in common – the presence of a defect. The applied method provides for children to learn more slowly and with more illustrative means, based on the assumption that their academic abilities are weaker than those of normal children.

In 1976, a special commission of experts was established in Israel, headed by Prof. Cohen-Raz, whose goal is to redetermine which children have a disability and what is the purpose of their special education. After this commission, it was decided to define the child as needing special education, not according to the type of disability, but according to the needs.

Since the establishment of the State of Israel, special education, which is related to the care of children with various special educational needs, has undergone three reforms.

The first reform was made back in 1953. ***The State Education Act***, which provides for free compulsory education for all children aged 6 to 15, including children with disabilities. ***For the first time, children with disabilities in Israel are defined as having the right to education!***

In order to bring the student to a situation in which he or she can be integrated, the law provides that "at the beginning of each school year, the staff of the special educational institution shall adopt an individual curriculum for each special education child who studies in that institution." The Ministry of Education describes in detail the stages in which the in-person training program is to be developed.

The contribution and innovation of the Special Education Act is that it includes educational challenges for every child with a disability. Moreover: the law recognizes that the needs of this student are varied and, therefore, in addition to teachers, a multiprofessional team such as speech therapists, physiotherapists, etc., must be involved to adjust the curriculum and adapt it to the student.

The didactic model on which the law and the regulations adopted after it are based is the medical model. The criterion of learning success, according to this model, is the "normal" functioning. The Special Education Act focuses on integrating the learner into society by developing skills and "correcting defects," according to the standard of normative behavior.

A quarter of a century later, in 1988, the second reform of special education took place when ***the Special Education Act was adopted*** (Margalit, 2000; Lazer, 2000). The law extends the right to education for all Israeli children without distinction between those who live in their parents' homes and those who live in boarding schools. This is how special boarding schools are opened. Another significant change made within the framework of this reform is the extension of the age of children entitled to free compulsory education on behalf of the state until the age of 21. At the same time, the law takes measures to expand the responsibility of the educational framework by providing for the inclusion of a range of therapeutic activities, such as occupational therapy, work with a speech therapist, psychological counseling, etc. Similar.

A third milestone has been overcome in this century with the entry into force of the amendment to the Special Education Act (2018), which leads to the beginning of a new reform based on the social model of a learner with disabilities – learning in the regular classroom, as a preferred and preliminary policy before any referral to education. This, at the same time, involves the family in this decision.

The amendment also underlines the importance of universal design, according to which the learning environment must be made accessible to the needs of learners, with the help of physical adaptations, appropriate learning materials and innovative technologies. The main assumption of the amendment to the law is that the definition of the individual, as an exception, is rooted in the social attitudes that label and classify people according to the degree to which they are "normal" or "special" – and that in order to accommodate every child with a disability, it is not the child, but the environment that must change.

Every school should be made accessible so that every student, with or without a disability, can learn and be educated together with their peers in their natural community "like everyone else."

Currently, ***there are three main models for integrating children with special needs into the regular education system*** in Israel:

- ***individual accommodation*** of children with special needs in classrooms or in regular kindergartens;
- ***special classes*** in regular schools, which mainly include children with mild retardation, deafness, blindness, mild brain damage and autism (Reiter, 1992);
- ***integration classes***, in which a limited number of children with disabilities are registered.

The reforms carried out in special education show the likelihood of implementing inclusive reforms in education and moving it forward in accordance with philosophical, ideological, cultural and technological changes (Avisher, Lazer, 2000).

The aim is to strike a balance between accepting every individual, every child and every adult, as a human being with equal rights and providing unique support, while preserving the dignity of the learner, respect for them as a person and respect for the efforts they invest in training.

Educational reform in Israel seeks to unite, as a common part, regular and special education and to provide an answer to the entire range of social circles.

The organization of *special education* is a priority in many countries, and borrowing from foreign experience, each of them strives to separate its own structures and organization in this area and to adapt the already tested ones in its economic and national identity.

The problems of special education are the subject of *the European Agency for Development in Special Needs Education* (2003), which considers physical education and sport as an integral part of this education (Nikolova, M., 2009). It supports Member States in their inclusive policies and practices in the field of education for children with special needs. Her work focuses on supporting the development of inclusive education systems for equal educational opportunities.

### **I.1.2. Integrated Education in Children with Special Educational Needs – Emergence, Essence and Development**

Historically, in the period between the 60s and the mid-80s of the twentieth century, a process of normalization in the attitude towards people with disabilities arose and was imposed. At the end of this period, the so-called. model of civil rights of these people, as education is already subordinated to the principle of free access and social inclusion (integration) in society (M. Özsarı, 2016).

The founder of what we call "integrated education" today is considered to be the great Austro-Hungarian pedagogue Johann Klein, who in 1837. He was the first to raise the idea of preschool education for visually impaired children and more - for special training of their parents.

The idea of integrating children with disabilities into a normal school is perceived with understanding by the public, but the degree of coverage of these children in the educational system in different countries is different.



The beginning of the new approach and the new attitude towards people with disabilities and their integration and re-socialization is marked by the motto raised by UNESCO in 1990. "***School for all!***". Children with physical, sensory and mental disabilities, children from ethnic and nomadic groups, homeless and gifted children should have real access to this school. The idea of creating a school for all children, together with the one adopted in Austria in 1993. The "***Vienna Convention***", according to V. Radulov (2004), are the leading documents whose main goals are aimed at legislative changes regulating the complex care for people with disabilities and the transition from special to integrated schools.

In the late 1970s, the ideas of integration began to take hold in ***Israel***. This led to a decrease in the number of special education schools and, at the same time, to an increase in the number of special classes in mainstream schools in the country (Ronen, 2007).

The inclusion of students with disabilities in regular education in Israel is regulated by ***the Law on Special Education (1988)***, which establishes a priority for inclusion, increases the rights of students to treatment in health institutions, allows parents to participate in committees in decision-making on the placement of their children, as well as in the preparation of documents (Lipshitz, 1995; Marom et al., 2006). This means targeting a specific образователна институция да се извършва в полза на ученика, според неговите реалните нужди (Chen, Shulman and Had, 2006; Marom et al., 2006).

The law is based on the humanistic concept from which the principle of equal rights and the principle of quality of life derive (Igal and Malichi, 2007).

The success of integration depends on the mobilization of the system as a whole and of the teacher in particular. Discussing in depth the attitude of teachers to integration, Talmore (2007) states that they have a positive principled position towards the idea of integration, but at the same time they have many different reservations, most of which, according to the author, are justified.

According to Reiter (2007), integration is a way of life, a utopian state in which people with disabilities will be able to integrate into society spontaneously, despite their problems.

The integration of students with disabilities into the education system in Israel requires a new, different kind of curriculum planning, different from the model of a single program (in full-time education) or an individual program (in special education). Such planning should include adjustments that will allow for successful integration.

As part of the commitment of the education system to create conditions for educational and social partnerships, in accordance with the Special Education Act of 1988, special classes are being formed in the country, which are integrated with ordinary classes in

mainstream schools. Students from the special class are trained according to the regular curricula for the respective age group, of course, after some adjustments and changes, and in addition, they study subjects that prepare them for life, according to the characteristics of their functioning and needs. who need treatment receive it on the same school day (individual or group, depending on the type of disability), as part of the individual curriculum. The director of the institution appoints a special pedagogue, in coordination with the head, who organizes and coordinates the teamwork in the school.

In the last two decades of the twentieth century, most European countries provide education to children with disabilities by integrating them into a normal general education system (M. Nikolova, 2006). In this regard, J. Kossewska (2003) notes, however, that the countries' own systems for the integration of children with disabilities, taking into account the specifics of national specifics, are so different that it is difficult to find common sides and elements between them.

One of the most active European countries regarding the integration of children with disabilities in the school environment *is France*. Thanks to the efforts of French specialists, a government program called "Handiscol" has been developed, which aims to improve the integration of children and teenagers in mainstream schools (P. Koseva, T. Pedev, 2012).

In the German *education system*, both integrated education and special schools are included in parallel. In mainstream schools, there are classes for children with special needs, as well as special schools for children with visual difficulties, hearing impairments, mental retardation, learning difficulties, behavioral disorders, health problems. The federal government finances projects and programs for the development of both general education schools and special schools.

In *Bulgaria*, the process of integrating children with disabilities into mainstream education began at the beginning of the 21st century with Ordinance No. 6 of the Ministry of Education and Science of 2002. (SG, No. 3) for the education of children with "special educational needs and/or chronic diseases"). This marks the beginning of a new consideration of the rights of children with disabilities and opportunities for their development in the society of "children in the norm". This Ordinance defines the state educational requirements for children with special educational needs (SEN). Article 2, paragraph 1, for the first time defines integrated education: "Children with special educational needs and/or chronic diseases shall be educated and brought up in an integrated manner in kindergartens, schools and service units" (Ministry of Education and Science, 2002).

In November 2003, the new "Regulations for the Implementation of the Public Education Act" was published, which officially marked the beginning of the campaign called "**integrated education**". The main goal of integrated education is to achieve the integration of children with SEN in the environment of their peers, and subsequently in society as a whole.

In 2004, a National Plan for the Integration of Children with Disabilities and Chronic Diseases in the Field of Public Education was developed in Bulgaria, as well as an Action Plan for its achievement. It formulates values, principles and goals, measures and responsibilities for their implementation, the deadlines and the necessary resources to achieve them.

According to E. Nikolova and K. Konstantinova (2005), integrated education means the implementation of the educational process in a common school, in one classroom, jointly by children with and without disabilities

I. Karagyozov (2008) emphasizes that the very essence of integration presupposes a multitude of phenomena related to two main significantly different functional environments – the subjective (internal) environment of the child himself, with developmental deviations, his specific pedagogical needs and mental properties, and the social (external) environment with its objective or relatively independent of the individual relations.

It should be noted that an important feature of integrated education is that it is aimed at the individual capabilities and interests of children with SEN, which is why they are not required to meet the standards of education for the respective grade and even if they have mastered a minimum of knowledge, they move to a higher grade. In the world practice, there are about 20 models for integrated learning (V. Radulov, 2016), which are represented in the USA, Canada, the Scandinavian countries, Russia, Bulgaria, Israel and many other European countries.

In the modern concept of the educational system in the Republic of Bulgaria, after the entry into force of the Preschool and School Education Act, the long-term existence of the auxiliary schools, in which children with moderate and severe mental retardation and multiple disabilities were taught, was terminated. Within one year from the entry into force of the new law, the auxiliary schools were transformed into state and municipal centers for special educational support. Article 43 of the Law on Special Educational Support (2015) also regulates the status of the so-called "Children's Education". "special schools", which include those for training and support of students with sensory impairments (impaired hearing or impaired vision), as well as educational boarding schools, and more - inclusive education becomes a top priority of the centers for special educational support, where preventive, diagnostic, rehabilitation and resocializing work with children and students, as well as

resource support for children and students with special educational needs (M. Malchev, 2019).

The elimination of discriminatory factors and the establishment of relations of equality for people with disabilities (S. Matikova, 2007) is among the most important principles of modern social policy and a priority of educational systems in many countries around the world.

### **I.1.3. Inclusive education of children with special educational needs**

Under the influence of social development and the new attitude towards people with disabilities, in the last decade of the twentieth century, a new, democratizing educational concept and a new policy were raised, which gave a new impetus and a new rethinking of integrated education, which, according to V. Radulov (2008), becomes part and function of a global concept called *inclusive learning*.

The term "*inclusive education*" has established itself in the specialized literature as early as the 90s of the last century, when, thanks to UNESCO, in 1994. The Salamanca Declaration was adopted, although the two terms "integrated" and "inclusive education" are often used interchangeably. Inclusive education is a relatively newer term that carries the idea that the individuality of each student should be accepted as it is, and education should be oriented in such a way that the needs of each child are satisfied.

Specialists point to integration as one of the basic principles of inclusive education or as its prerequisite (Jonsson, 1995; Wolfendale, 1997; M. Tsvetkova, 1999; V. Radulov, 1995, 2003; M. Cholakova, 2000; E. Nikolova, K. Konstantinova, 2005). According to them, integration means placement of pupils with disabilities in existing general education institutions, but on condition that they can adapt to the standardised requirements of these institutions.

UNESCO's 1993 concept "*Education for All!*" is a document of international importance, which defines as a violation of human rights and an unacceptable form of discrimination the deprivation of children with specific pedagogical needs of the right to study in ordinary schools. This document emphasizes the right of all children *to live and study together*, because they are members of the same society. In 1994, the final document of the UNESCO World Conference "*Education for Special Needs, Access and Quality*" was signed and the "Salamanca Declaration" was adopted, which for the first time introduced the term "inclusive education" and marked a fundamental change in the history of special education. In the document, specialists use the term "inclusive learning" too loosely, which is the full equivalent of "integrated learning".education", with an

emphasis on the "**acceptance**", without any restrictions, in ordinary inclusive schools of all "disabled and gifted, wandering and working children, those from linguistic, ethnic and cultural minorities, as well as children from other, disadvantaged, extremely poor environments and groups". (M. Hristov, 2016).

In this regard, a project "Inclusive Education" has been launched in Bulgaria, financed by the European Social Fund, in the implementation of which 84 pilot schools in the country are involved. A National Program for Guaranteeing the Rights of Children with Disabilities (2009-2012) has also been developed, which provides for the inclusion of training for each child with SEN to be prepared an individual educational plan. Upon completion of a respective grade, students with SEN, included in the education of the mainstream school, receive a qualitative, not a quantitative assessment. In order to obtain a certificate of completion, at the end of the school year, the student takes exams before a committee on the subjects specified in the individual educational plan (N. Balkanska, 2007).

The right of a child with permanent disabilities to learn with their peers without disabilities is one of the basic principles of education in EU countries (A. Przybysz, 2005). This is a step towards a future united society of adults with a higher standard of living.

#### **I.1.4. Inclusive education - essence, philosophy, principles and development**

Inclusion is a leading value in the modern democratic society and at the same time a fundamental term for the social model. It is associated with democratic participation and with other fundamental principles of democracy, such as: respect for differences, pluralism and equality. The participation of each person in common affairs appears as one of the highest achievements of democracy, and for the individual it is an unconditional right and an important resource in the process of realizing one's own contribution to development (T. Mladenov, 2009).

The focus of inclusive education is on the changes in the attitudes of the system in mainstream schools, as a whole – from overcoming prejudices through changing the physical environment to flexibility and adaptation of educational content and teaching oriented to the needs of each child-student, to achieve a positive emotional and social status in society (M. Baeva, 2009).

Perhaps the most common practice in the field of inclusion in **the UK** is related to the application of the "*Inclusion Index*" methodology, which is a tool for organizational development of the school in an inclusive direction. *The Inclusion Index* is the result of a 3-year pilot project implemented in 22 schools between 1997 and 1999. from the Center for

the Study of Inclusive Education of Great Britain (T. Mladenov, 2009; T. Koleva, 2009). It outlines the framework in which three types ***of inclusive values are concentrated:***

- *building values;*
- *values in relationships;*
- *values expressing states* (T. Booth, M. Einskow, 2011).

In **Bulgaria**, the Inclusion Index was introduced by the Bulgarian team of the British Save the Children Fund in several stages in 36 general education schools and kindergartens within the framework of the project "*Socially Inclusive Europe*" in the period 2004-2007. continues to train kindergartens and schools on how to implement and use the Inclusion Index (D. Koleva, 2009).

In its evolution, inclusive education also develops a special sensitivity, which is directed with priority to those children and students who need support (general and additional) (Y. Nunev, 2008).

The European COFACE Platform (2019) defines *inclusion* as a process of "*systemic reform consisting of changes in content, teaching methods, approaches, structures and strategies in education to overcome barriers in order to provide all students with an equal and active learning experience and an environment that best suits their requirements and preferences*".

Inclusive education is no longer just a trend or an educational experiment, but *a global educational policy* that has been successfully implemented for decades (M. Tsvetkova-Arsova, 2018).

T. Booth and M. Einskow (2002) consider the components of the inclusion process relating to problems that need to be addressed: the right of students to education in their place of residence, improving the school environment for both staff and students, strengthening the role of schools in community building and in the perception and promotion of life values, increasing student achievement, promoting sustainable relationships between schools and communities, promoting the understanding that *inclusion in education* is one of the aspects of *inclusion in society*.

As early as 1988, the American authors Reynolds and Birch described three different *forms* of inclusion of students with special educational needs, as follows: *physical, social and educational*.

Often the ideas of *inclusion* are juxtaposed with the ideas of *integration*. What the two approaches have in common is the desire to *be included in a common environment*. The important differences between them are those that make *integration an intermediate*

*stage in the transition from institutionalization and special education to inclusion in education.*

In Bulgaria, until recently, there was no talk of *inclusive education*, but of *integrated education*, and the perception that they are synonyms was widespread, but in reality there is a significant difference between them. In this regard, M. Baeva (2009) and K. Karadjova, D. Shtereva (2019) explain that integrated education is mistakenly perceived by many people as *providing the physical opportunity* for students with special educational needs to be in school and emphasis is placed on their presence there. The integration and inclusion of children with special educational needs is actually obtaining the right to study in a comprehensive school, together with their peers, to have the opportunity to build full-fledged social skills and contacts, to be surrounded by a supportive environment and to receive assistance tailored to their capabilities, skills and interests in education, to receive resource support from specialists, to be trained in adapted curricula, materials and aids (P. Mihaylova, 2019).

The new Law on Preschool and School Education (LPUE, 2015) for the first time formulates new norms and sets new criteria that change the mission of education in Bulgaria and define a new social role for the teacher. The goals of the school are already related *to the inclusion of all children* in the educational system, with their diversity of abilities, interests, different experiences and unique individual characteristics , and which are a decisive step forward in the development of Bulgarian education. The law practically regulates the so-called. *inclusive education* and *the building of a supportive environment*.

An extremely valuable and up-to-date document related to inclusive education is the adopted in November 2015 by the 38th session of the General Assembly UNESCO Conference *Education 2030 Framework for Action*, which focuses on *inclusive and equitable quality education and lifelong learning for all*. Its main goal is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (P. Marcheva, 2016).

Achieving *inclusive education systems* at European level can take place through EU funding programmes, including: EASI, Erasmus+, ESF+ and InvestEU.

In the summer of 2018 , Israel's Knesset approved Amendment No. 11 *to the 1988 Special Education Law*, aimed at promoting the inclusion of students with different needs, including students with disabilities, in regular educational institutions *to provide individual opportunity* for each student, according to their unique needs, their functional characteristics and the support they need, to participate in the learning process, to maximize their abilities *and advance in the academic, social and emotional field*.

According to the data of the Statistical Institute in Israel for the 2021/2022 school year, there are 287499 students with special educational needs in the country. Of these, 57538 are trained in the system of special schools and kindergartens. The rest are part of the *so-called inclusive education* in the different educational levels - 54995 are taught in *ordinary classes*, 59538 are trained with *With the help of resource teachers in the classes*, 115640 receive *additional hours through which learning is supported*.

The 11th Amendment to the Law on Special Education in Israel (in force since January 2020) strengthened the right of parents to choose the type of educational framework in which their children learn. This opened up opportunities for *individual integration*, even for students with different functional levels on the autism spectrum.

In addition, students with autism (ASD) are entitled to personal assistance, which will allow them to successfully *integrate into regular education*.

## **I.2. Peculiarities of training and education for children and adolescents with special pedagogical needs**

Over the past century, in many European countries , there has been a passage through various concepts in the theory related to the pedagogical field under consideration: rehabilitation pedagogy, defectology, correctional pedagogy, special pedagogy or special education.

According to Z. Dobrev (2008), special pedagogy is a complex science of study of the peculiarities in the development of children with special needs, in order to reveal the regularities of their upbringing, training and education, and S. Denev (2016) defines it as a branch of pedagogy dedicated to the education of children with special needs, i.e. those with motor and sensory disorders, mental disability or problematic development.

For his part, I. Karagyozov (2008) believes that the essence of special pedagogy lies in the fact that it is a scientific and practical activity aimed at the creation and use of such forms of social relations with children with special educational needs, through which in the process of organized interaction with them (special education and upbringing) their correction can be achieved , compensation and development in accordance with social norms and requirements and their inclusion in natural social relations.

In the last decade of the twentieth century, there was an intensive development of the area under consideration, especially after the adoption of the Salamanca Declaration (Spain, 1994). Gradually, the trend towards switching from the so-called. "medical model" to the "social model", also defined as "socio-pedagogical", which focuses on the integration,



inclusion and socialization of adolescents with special needs, as well as on increasing the role and importance of upbringing, training and education for their overall development.

Conducting pedagogical diagnostics, through which the personal development of children and adults with disabilities is established, is an important moment in working with these individuals. The pedagogical diagnosis of persons with special educational needs is closely related to the methods of psychology and medicine, which is due to the interdisciplinary nature of special pedagogy and its close connection with many psychological and medical disciplines.

In recent years, the term "complex pedagogical assessment" has been established in the theory and practice of special pedagogy (Radulov, V., 2004). This implies the creation of diagnostic teams of various specialists (special pedagogue, psychologist, speech therapist, parent of the child, pediatrician, school principal, etc.) to carry out pedagogical diagnostics of children with special needs (Z. Dobrev, 1992; V. Radulov, 2004).

In conclusion, it is necessary to emphasize once again that the process of training and education for children with disabilities is categorically different from that of children and adolescents without disabilities. The specified specificity in the training and education of children and adolescents with special pedagogical needs actually characterizes the trend of transition from traditional to modern education and upbringing for children with disabilities.

### **I.3. Characteristics of Disabilities and Developmental Features of Children on the Autism Spectrum**

In the social space, there is a prevailing perception that people with special needs should be given a positive image as equal people. It is necessary to overcome social prejudices against them. In this regard, S. Matikova (2007) concludes that society does not want to accept the diversity and peculiarities in the lives of people with disabilities, which are part of life, accompanying our daily lives.

According to the International Classification of Diseases (ICD-10), autism belongs to the group of generalized disorders in the development of the child, which is characterized by qualitative disorders in social relationships and in the way of communication, as well as in the presence of a limited stereotype, expressed in a repetitive complex of interests and activities (V. Alexandrova, 2021). This, quite naturally, puts serious barriers between children on the autism spectrum and the rest of their environment and is proof of the great difficulties that the sports educator has to overcome when working with such children. At the same time, society is aware that they need to be socialized and prepared for a relatively

independent life. Extremely important, in this sense, is the place of physical education and adapted sports in the daily life of children from autism spectrum.

The levels of physical capacity of people with mental disabilities are low, mainly due to their insufficient participation in physical activities. However, with systematic training and training, the level of development of the main signs of physical capacity in people with disabilities could exceed that of people without disabilities (M. Damentko, 2002).

Children and young people with mental disabilities who are subject to training lag behind in their motor development by 2-4 years. It has been found that basic motor qualities such as endurance, strength, speed, balance and mobility are much less developed in people with mental disabilities (Rh. Bruinings et al., 1974; Kioumourtzoglou, 1994).

All this proves that regardless of the difficulties encountered in working with children on the autism spectrum, all of us, the whole society, are aware of the need to invest maximum efforts to socialize and prepare these children for a relatively independent life and to cope with the challenges they have to overcome in the future. In this sense, the place of physical education and sports, of course in their adapted forms, is especially important and should be a priority in the daily life of children with special needs.

#### **I.4. Influence of adapted physical activity and play activity on the development of children with SEN**

Motor activity is a factor that mainly affects the younger generation and is of particular importance for people with various disabilities (Tumanova, B., 2012).

Physical activity, and in particular sports activities, is an important means of reducing the effects of disability. Through physical exercise, people with disabilities become more independent and independent, become involved in a certain individual or group activity, increase their social activity and engagement, and regain their faith in life. Physical exercises and sports are an extremely important and natural means of supportive rehabilitation and are extremely necessary for the adaptation of people with intellectual difficulties to life (Aladzhov, K., 2010).

Physical activity is a factor that mainly affects the younger generation and is of particular importance for students with special educational needs. Its importance is determined by the recreational essence and affects the body by restoring, training and mentally relieves, strengthens and improves health and habits, and makes it possible to achieve satisfaction from success (M. Özsarı, 2016).

Adapted physical activity is aimed at people with special educational needs and aims to stimulate positive reactions in the system and functions of the body, forming physical qualities, skills, coordination and improvement of the adaptive skills of the personality (H. Kehayova, 2009; A. Hadzhieva, 2011).

Sports specialists believe that "one of the successful ways to implement an effective process of inclusion in sports activities, whether in physical education class, in training or during various recreational activities, is to adapt these peculiar ecosystems to the needs of individuals" (I. Kirilova, S. Jobova, V. Alexandrova, 2020).

According to V. Alexandrova (2017), sports activities have an extremely beneficial effect on people with intellectual difficulties, but mostly on the development of their specific skills. Of interest in this regard is her research (Alexandrova, V., 2021), which aims to establish the influence of specialized influence with the means of swimming sport on the physical qualities and specific skills of children with mental retardation, including those on the autism spectrum. Based on her conclusions, she develops her own methodology for teaching swimming.

Our research shows that the motor capacities of children with autism are very different, which is why the groups in which they usually work within the school are inhomogeneous in terms of their capabilities (P. Arazi, 2024). The analysis also proved that children with SEN, in general, have a low level of physical fitness, which is why we believe that the development and implementation of a specialized methodology for influencing their physical qualities and specific skills, based on sports and preparatory games, is of utmost importance.

For three months, S. Naseva (2023) conducted classes with a group of boys with autism from different spectrums. In the classes, it includes a variety of exercises of a natural-applied nature, mobile games and drills, In conclusion, she notes that the conduct, within the framework of the general education system, of group activities of children with SEN has a positive effect on their motor, emotional, social and personal qualities. was also confirmed by our research (P. Arazi, 2024).

People with mental disabilities often engage in games with much younger than them. During play, children forget their weaknesses and expose their true nature and knowledge. This allows teachers, through games, to get to know their students to the smallest detail (Sh. Güneş, 2021).

Outdoor play is a creative activity aimed at achieving a certain goal in compliance with certain requirements. Its pedagogical functions require its inclusion in the overall educational process (M. Andreev, 1996).

In the game process, the child models typical images of objects and phenomena from the surrounding world, which is important for organizing his experience into a system of concepts, develops his imagination and creative abilities (D. Bergen, 2002).

Play is an activity that is extremely important for the child. Outdoor games, which require active movements, contribute to the development of muscles, coordination of movements and physical qualities, stimulate blood circulation and contribute to a more complete metabolism (E. Evgenieva, 2011).

The purposeful and systematic application of outdoor games supports the long-term formation of motor habits in children. Games also contribute to the mental development of children. Memory, attention, imagination, will, thinking and speech are developed (M. Damyanova, 2000).

Sports games, as a higher form of play activity, have a beneficial impact on people with disabilities and can bring them many benefits. It is important to note that successful participation in sports games for people with disabilities requires *adaptation and individual guidance* both according to *the type and degree of disability* and according to the individual sports capabilities of each individual. Different sports and games are adapted specifically to the needs of people with disabilities so that they can fully participate and enjoy the benefits of physical activity and social integration.

According to a number of authors (M. Balik, E. Mateos, C. Blasco, 2000; M. Bezdičkova, I. Machková, H. Válková, 2001; W. Wind, R. Schwend, J. Larson, 2004), the regular participation of children with intellectual deficits in various adapted programs for physical activity and sports leads to an increase in their physical endurance and working capacity, improves body balance, significantly increases the level of their motor skills and have a positive influence on their adaptive behavior (M. Block, P. Conatser, R. Montgomery, L. Flynn, D. Munson, R. Dease, 2001).

The curricula in special schools allow the requirements for achieving a certain level of knowledge, skills and competences to be applied flexibly, depending on the needs and abilities of children with SEN, and in accordance with the school or individual curriculum of each student. The aim of the training is to optimize the motor regime, increase physical capacity and coordination capabilities, according to the age specifics of development, as an integral part of the intellectual and emotional development and upbringing of children with varying degrees of mental retardation and multiple disabilities (S. Belomazheva - Dimitrova, S. Denev, M. Alexieva, 2016).

P. Koseva (2012, 2013) believes that the implementation of recreational motor activities in the natural conditions of the environment, in nature, has an extremely positive

impact on the process of maintaining and restoring the physical capabilities of people with disabilities. In order to establish the effect of various recreational motor influences with the means of sports orienteering on the health and functional state, specific preparedness and social adaptation of students with intellectual disabilities, the author develops and implements in practice the first *specialized methodology for adapted motor recreation*.

The systematic use of physical exercises and adapted sports in children with Asperger's syndrome is a leading factor and an important prerequisite for health prevention (M. Fitzgerald, A. Corvin, 2001; I. Kirilova, S. Jobova, 2018). The study of V. Alexandrova (2019) is aimed at this totality, who develops and tests in practice *an adapted swimming methodology for children with Asperger's syndrome*.

The implementation of *specialized sports and animation programs for activities in open water environments with adapted sports and outdoor games of people with mental disabilities* (S. Djobova, D. Dasheva, M. Nikolova, P. Geshev, 2009) allows participants to gain sports experience, create social contacts and positive emotional experiences, and increases the effectiveness of the process of social inclusion and personal identification. To all this should be added the effect that outdoor activities have on children's health.

Indisputable in this respect is the contribution of adapted sailing, which provides great opportunities for people with disabilities to enjoy the forces of nature - wind and water, feeling free and independent, and at the same time leads to physical and functional improvement of the body and has a great tempering effect. The sailing program of Special Olympics gives athletes with mental deficits the opportunity to train and achieve personal growth in adapted sailing (S. Bahchevanski, 2016, 2019; S. Jobova, H. Hristov, 2020).

The developed *specialized methodology for adapted physical activity and cooperation with the means of the football game* (S. Denev, 2006, 2014) has been tested in practice with the participation of 44 children with intellectual disabilities aged 11-13 years, trained in Bulgarian Resource Centers, which undoubtedly proves its high effectiveness.

The joint participation in various adapted sports and other motor activities of people with disabilities and healthy athletes supports the development of attitudes regarding the acceptance of individual differences, protects the right of access to an active lifestyle and sports, promotes innovative joint programs and systems leading to personal growth of all participants in this process. In this sense, an extremely positive role is played by the so-called. integrated sport (Jobova, S., Borukova, M., 2015).

The practice of adapted basketball opens up ways to increase the level of specific preparedness of people with difficulties, as well as opportunities for correction of physical development. Adaptations of the game of basketball require the manifestation of all motor

qualities, which is impossible to provide by means of rehabilitation, and more - provide both social integration and a change in a positive aspect of the consciousness of society, thus helping to build a society without barriers (M. Alexieva, 2019).

According to P. Demirci (2019), adapting activities for children with cognitive problems is extremely difficult. In these cases, there is no universal formula or specific practices that educators working with such children can apply, due to the strict specifics in the expression of the specific cognitive problem. Therefore, the tasks for the activities must be adapted, which is expressed in the assignments in parts (the movements are initially dissected for the purpose of learning, and subsequently joined).

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The study of the specialized literature sources and the analysis of the state of the problem allowed the following ***working hypothesis*** to be formulated:

***The development and implementation of a specialized methodology in physical education classes, based on the means of sports and preparatory games, will increase the level of physical qualities and specific motor skills of 7-8-year-old Israeli children with special educational needs, trained in the inclusive environment of primary school.***

## **II. PURPOSE, TASKS AND METHODOLOGY OF THE STUDY**

### **II.1. Purpose and objectives of the study**

***The aim*** of this study is to establish the impact of the means of sports and preparatory games on the physical development and motor abilities of 7-8-year-old Israeli children with special educational needs, taught in the inclusive environment of primary school.

For the implementation of the set goal, the following tasks have been formulated:

1. Establishing the level of physical development, physical fitness and specific motor skills of 7-8-year-old Israeli boys from the autism spectrum.
2. Development of a specialized methodology for developing the physical qualities and motor abilities of the studied children with SEN in the inclusive environment of primary school.
3. Conducting a sports and pedagogical experiment to check the effectiveness of the developed methodology.

4. Determination of the significance of the changes in the levels of the studied signs for the duration of the experiment.

5. Assessment of the physical development, physical fitness and specific motor skills of the studied Israeli children.

6. Revealing the factor structure of physical development, physical fitness and specific motor skills of children with SEN.

## **II.2. Methodology of the study**

### **II.2.1. Organisation of the study**

The current survey was conducted in the period September 2021 – March 2024.

**The subject** of the study is the physical development, physical fitness and specific motor skills of 7-8-year-old Israeli children on the autism spectrum.

**The object** of research is the parameters of physical development and the main signs of physical fitness and specific motor skills of the studied boys.

A total of 28 boys, aged 7-8 years, were included in the study. (2nd grade), from the school "Merhavin" in the town of Pardes Hana (Israel), 8 of whom were diagnosed as children with special educational needs from the autism spectrum (**Table 3**) and work in the inclusive environment of the primary school.

**Table 3. Characteristics of the research contingent**

<b>Nº</b>	<b>Name</b>	<b>Age</b>	<b>Gender</b>	<b>Diagnosis and Type of injury</b>	<b>Degree of disability</b>
<b>1.</b>	N. J.	8	Male	<i>Autism (ASD)</i>	Average
<b>2.</b>	J. X.	8	Male	<i>Autism (ASD)</i>	Average
<b>3.</b>	L. A.	7	Male	<i>Autism (ASD)</i>	Severe
<b>4.</b>	S. K.	8	Male	<i>Autism (ASD)</i>	Light
<b>5.</b>	A. F.	7	Male	<i>Autism (ASD)</i>	Average
<b>6.</b>	J. D.	7	Male	<i>Attention deficit hyperactivity disorder (ADHD)</i>	Severe
<b>7.</b>	K. R.	8	Male	<i>Asperger's</i>	Severe
<b>8.</b>	G. E.	8	Male	<i>Autism (ASD)</i>	Average

The remaining 20 boys are without health problems. As can be seen from the table, 3 of the children have a severe degree of disability, 4 – with a moderate degree and one – with a mild one.

In the spirit of correctness, it is necessary to state that all children participated in our study with the permission of their parents.

It should also be emphasized that during the first term of the observed school year 2022/2023, each of the children with SEN participating in this study The inclusion of only one student with autism in each regular class allowed, with the help of a resource teacher, to be prepared for the second term, when, together with the other children with SEN, he participates in physical education and sports education in the same general class.

Additionally, during the summer vacation period (from July 1 to August 15), the so-called "special education sessions" are organized for students with special needs. "Summer schools", in which outdoor games, dances, animation and recreational and sports preparatory activities, care for nature and animals are held. These activities support the psychophysical development, communication capabilities and social skills of children, as well as parents in their daily care for their upbringing and upbringing.

For the needs of the study, at the beginning and at the end of the second term of the 2022/2023 school year, sports and pedagogical testing was carried out on 12 indicators, of which:

- for **physical development** – 3 main morphological features;
- for **physical fitness** - 4 sports and pedagogical tests;
- for specific **motor skills** – 5 test exercises.

## II.2.2. Research methods and indicators

The following research methods **were used to solve the purpose and objectives of the study.**

### 1. Theoretical research and analysis.

2. **Anthropometry (Table 4** – indicators 1st and 2nd), respectively height and weight.

**Table 4. List of metrics included in the test battery**

Nº	Indicators / Parameters	Units of measurement	Measurement accuracy	Direction of growth
1.	<b>Height</b>	cm	1,0	+
2.	<b>Weight</b>	Kg	0,1	+
3.	<b>Body mass index (BMI)</b>	kg/m <sup>2</sup>	0,01	
4.	<b>Sprint 60 m</b>	s	0,01	-
5.	<b>Running 200 m</b>	s	0,01	-
6.	<b>Long jump</b>	m	0,01	+
7.	<b>Throwing a solid ball</b>	m	0,01	+
8.	<b>Dribbling with a basketball - with a comfortable hand</b>	s	0,01	-
9.	<b>Dribbling with Basque. ball - with an awkward hand</b>	s	0,01	-



10.	<b><i>Shooting in the basket - 10 attempts</i></b>	count	1,0	+
11.	<b><i>Feeding and catching to a wall - 10 pieces</i></b>	count	1,0	+
12.	<b><i>Dribbling with a soccer ball</i></b>	s	0,01	-

For a more complete assessment of physical development, the so-called Body Mass Index (BMI) was additionally calculated, which gives an idea of the degree of nutrition of the studied children (**Table 4**, Indicator 3).

**3. Sports and pedagogical testing** - to establish the level of development of the signs included in the test battery, characterizing physical fitness (**Table 4**, indicators from 4 to 7) and motor skills of children (**Table 4**, indicators from 8 to 12).

**4. Sports and pedagogical experiment** - to check the effectiveness of the specialized methodology for developing the main signs of physical development and motor abilities, with the help of the means of sports and preparatory games.

The training sessions are conducted under the guidance of regular teachers for 22 weeks (2 times a week) and last 45 minutes.

The implementation of the educational content through adapted physical education and sports was carried out in two stages (preparatory and basic) during the classes of compulsory preparation during the second school term.

*The preparatory stage* includes 2 activities, which are necessary, in view of the specifics of the contingent of students with special educational needs, for adaptation (physiological, psychological and integrative). During the classes, the students adapted both to the environment (venue, facilities, equipment, human resources, equipment, equipment, activities, etc.) and to the other students in the same class, who are without disabilities.

*The main stage*, during which the actual sports and pedagogical experiment was conducted, lasted 40 sessions. At the beginning and at the end of the experiment (twice) one activity was allocated for conducting sports and pedagogical testing in order to establish the state (initial and final) of the signs characterizing the physical development, physical capacity and game preparedness of the studied students.

The structure of the physical education and sports lessons followed the familiar stereotype: preparatory part of the lesson – 5 min., main part – 25 min., work in pairs – 5 min., musical-mobile game – 5 min. and final part – 5 min.

The educational and training work, during the conducted scientific and pedagogical experiment, was carried out according to the work of our specialists methodology. The adapted curriculum for students with SEN includes three thematic areas: *athletics, gymnastics and sports games*. As can be seen above, outdoor games are a mandatory part of every activity.

The developed methodology for adapted training in physical education and sports for children with SEN is consistent with the basic didactic principles of education, which, however, have been modified (according to Terzieva, G., 2019), taking into account the specifics of the educational needs of these children.

The applied physical exercises are consistent with the impaired coordination and spatial orientation of students with SEN and correspond to the individual ability to tolerate physical exertion, and initially small and moderate loads are applied, which gradually turn into submaximal and maximum. The selected physical exercises are of developmental and correctional and educational nature. Musical-rhythmic exercises, the playful nature of physical activity contribute to the practical assimilation of motor actions.

Along with the collective work, during the classes special time was set aside for individual exercises, which allowed the children, albeit more slowly, to reach their close goals.

Periodically during the experiment, partial examinations (some of the control tests) are carried out, with a view to making timely corrections in the educational and training work, as well as for mastering the test exercises.

**5. Competition** – to determine the level of the absorbed specific motor skills. At the end of each lesson, competitive relays, mobile or training games are held, and the winning team is announced. The teams include the so-called. partners – children from the class who are without health problems.

### **II.2.3. Mathematical-statistical methods for processing Results of the study**

The results of the study are subjected to mathematical and statistical processing through:

1. ***variational analysis;***
2. ***alternative;***
3. ***hypothesis testing;***
4. ***Physical analysis;***
5. ***method of sigma deviations;***
6. ***index method.***

### III. ANALYSIS OF RESULTS

#### III.1. Average values and variability of the studied traits at the beginning of the sports pedagogical experiment

##### III.1.1. Mean values and variability of physical development signs

The results of the variational processing of the data taken on the morphofunctional development of the boys from the studied population are presented in **Table 5**.

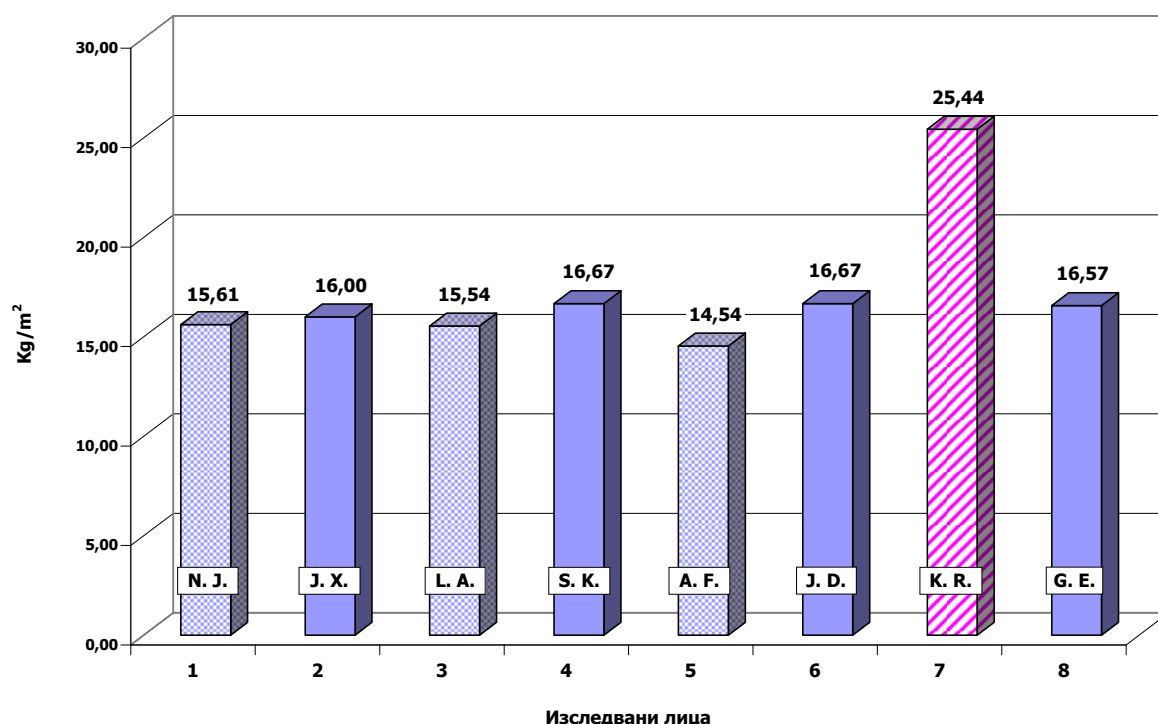
**Table 5. Average values and variability of signs of morphofunctional development at the beginning of the experimental period**

Nº	Indicators	Mean	S	V	min	max
1.	<i>Height (cm)</i>	123,88	4,32	3,49	119	130
2.	<i>Weight (kg)</i>	26,50	6,93	26,15	22	43
3.	<i>Body mass index (BMI)</i>	17,13	3,44	20,08	14,54	25,44

The analysis of the table shows that the average height of the whole group is 123.88 cm, and the average weight is 26.50 kg. The Body Mass Index (BMI) calculated on this basis, which provides information about the degree of nutrition of children, is 17.13 kg/m<sup>2</sup>.

Figure **1** shows that at the beginning of the observed period, the body mass index of almost all the boys studied was between 14.54 and 16.67 kg/m<sup>2</sup>. This also affects the above-mentioned average safety index of the entire population. The only exception was observed in J. R., where the BMI was 25.44 kg/m<sup>2</sup>. According to the norms of sports medicine, it can be rightly argued that at the start of the sports pedagogical experiment, in general, the studied children with special educational needs have a body weight in the norms for their age.

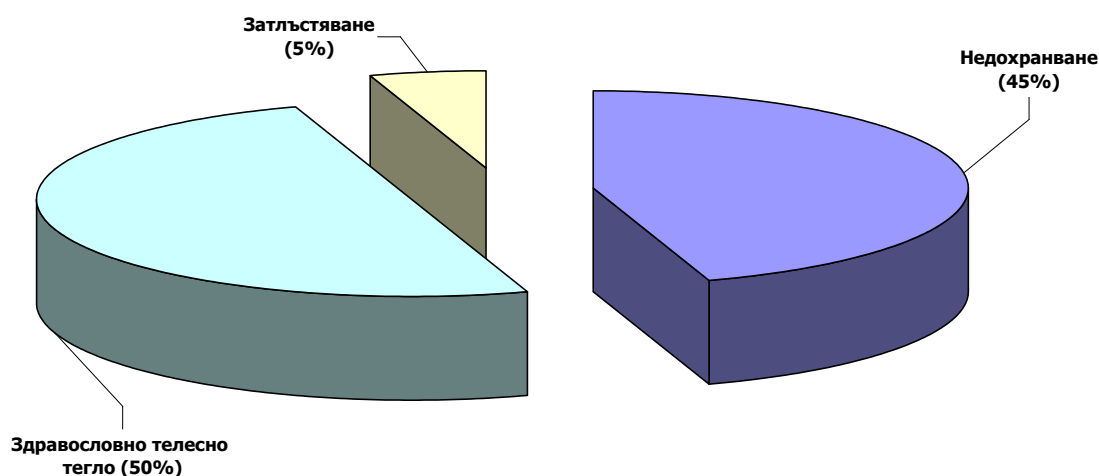
For the purposes of the study, the results characterizing the morpho-functional development of the studied population of children with special needs were compared with the results of children without health problems from the same age group from the same school. The results showed that healthy classmates of boys with special educational needs had a higher (by 9.27 cm) average ръст, но по-ниско тегло (с 1,2 kg), което, съвсем естествено, означава и по-нисък за групата среден индекс на охраненост – 14,24 kg/m<sup>2</sup>.



**Figure 1. Degree of safety of the studied children at the *beginning* of the experimental period**

The relative shares of the degree of nutrition of boys without health problems presented in Figure 4 show that according to the norms of the World Health Organization (WHO), only 50% of the children included in this population have a healthy body weight. It is noteworthy that too high (45%), in our opinion, is the relative share of children who are underweight. The evaluation of each result is obtained using an electronic calculator and is tailored to the age, height and gender of the children. According to the authors, with a body mass index below 5 percentiles, the person under study can be considered malnourished, and with a BMI of less than 3% - even "skinny". Unfortunately, all of the people studied in this group have a body mass index of less than 3%. As can be seen from **Figure 4**, among healthy children there is also 5% who can be said to be obese.

Despite the fact that some experts note that there is no ideal criterion, and that healthy children can be found in both low and high areas of body health, we still believe that children who are outside the zone of healthy body weight should be subjected to periodic monitoring. They should be given specialized care in order to compensate for existing deviations from the norm.

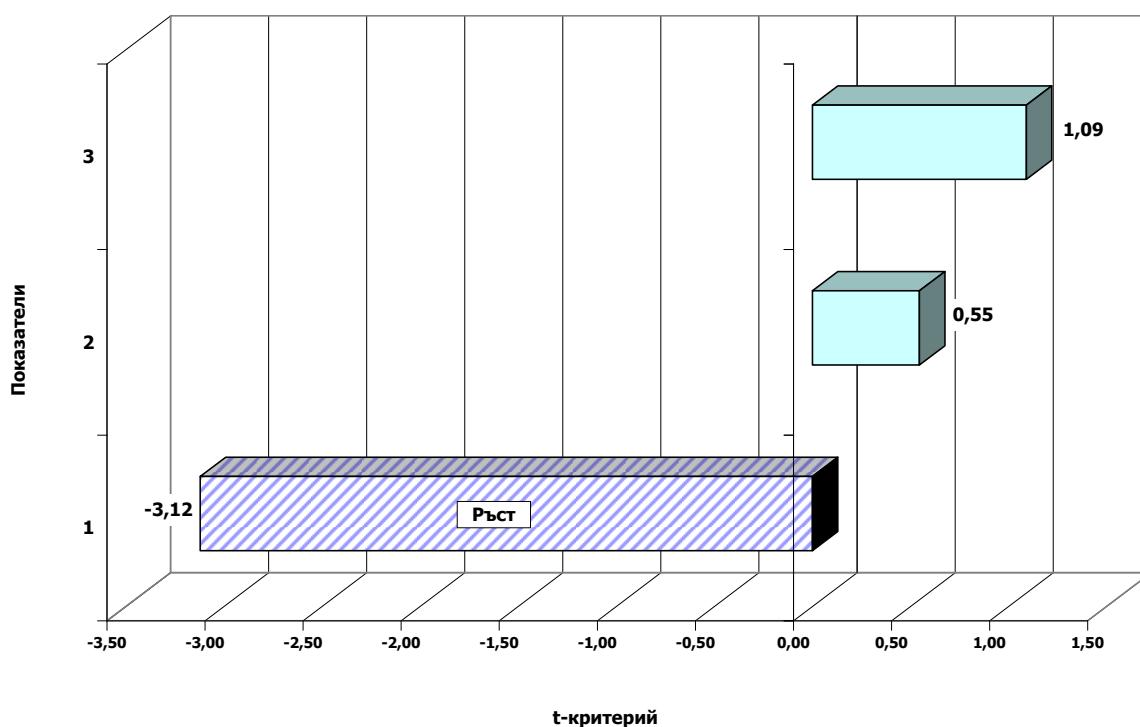


**Figure 4. Relative shares of the degrees of protection in total for the studied population of healthy boys at the beginning of the experimental period**

However, the presence of differences between the average levels of the studied traits does not give grounds to draw serious conclusions before their significance is proved. For this purpose, the so-called null hypothesis test was carried out using the Student's comparative t-test (**Figure 5**).

The analysis of the figure shows that the calculated t-criteria occupy values between 0.55 and 3.12. This means that with indicator 1 (height) the established value of 3.12 is higher than the critical value ( $t_{kr.} = 2.02$ , according to V. Gigova, 1999) and therefore, with a high guarantee probability ( $P_t \geq 95\%$ ) it can be argued that at the beginning of the experimental period the group of children without health problems has a significantly higher height than those with special educational needs.

With regard to the other two indicators characterizing physical development, however, according to the norms of sports statistics, the zero hypothesis can be reasonably accepted, according to which the observed differences in body weight and the nutrition index of children from the two compared groups are insignificant and can be explained by random reasons.



**Figure. 5. Significance of differences between mean levels of morphological traits of boys with SEN and their healthy peers at the beginning of the experimental period**

Important information for the study is provided by the results characterizing the variability of the observed features, which determines the degree of homogeneity of each of the two populations. The results show that at the beginning of the observed period, the group of children with SEN was homogeneous in terms of the height of the boys included in it. In terms of weight and body mass index, the scattering around the mean level is higher, which means that the group is relatively homogeneous in these morphological features.

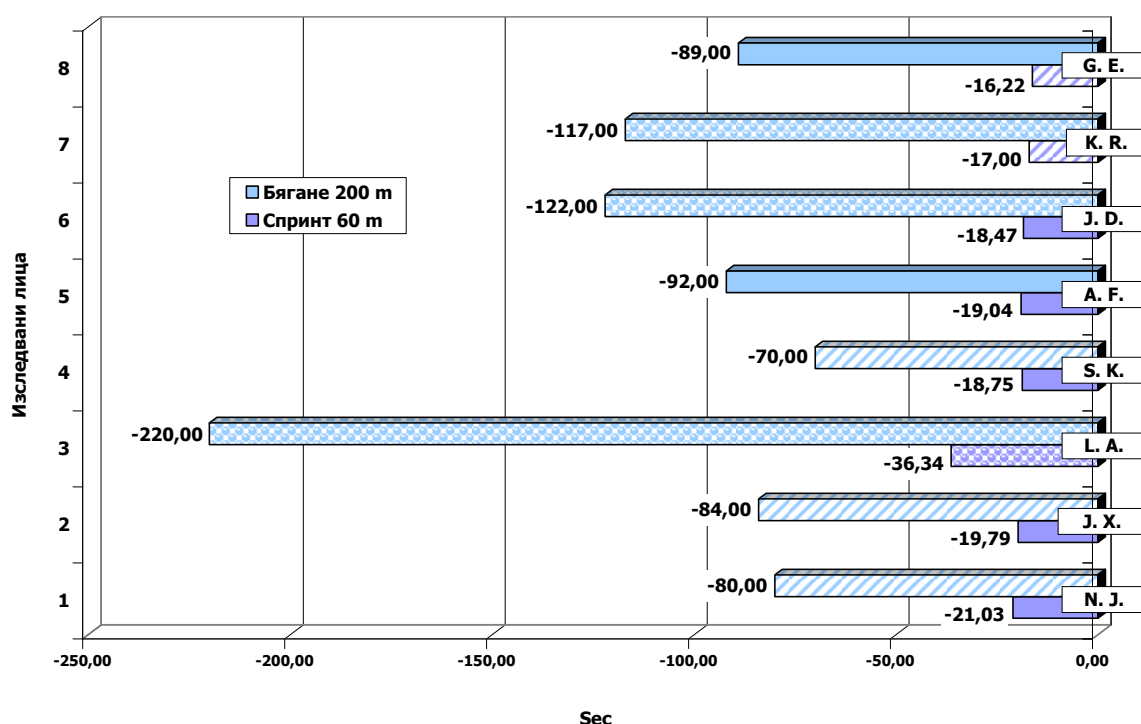
### **III.1.2. Mean values and variability of traits physical fitness**

The second group of indicators, included in the attached test battery, carry information about the level of development of some basic signs of physical fitness (**Table 6**).

The analysis of the table shows that, in general, the group of children with special needs ran the distance of 60 m for an average of 26.83 s, and in the 200 m run achieved an average result of 109.25 s. A clear idea of the individual results of each of the boys in these running disciplines is given by **Figure 7**.

**Table 6. Mean values and variability of signs of *physical fitness* at the *beginning* of the experimental period**

№	Indicators	Mean	S	V	min	max
4.	<i>Sprint 60 m (s)</i>	20,83	6,45	30,96	16,22	36,34
5.	<i>Running on 200 m (s)</i>	109,25	48,15	44,07	70	220
6.	<i>Long jump (m)</i>	0,84	0,38	45,37	0,1	1,4
7.	<i>Throwing a solid ball (m)</i>	1,94	0,89	45,79	0,5	3,05

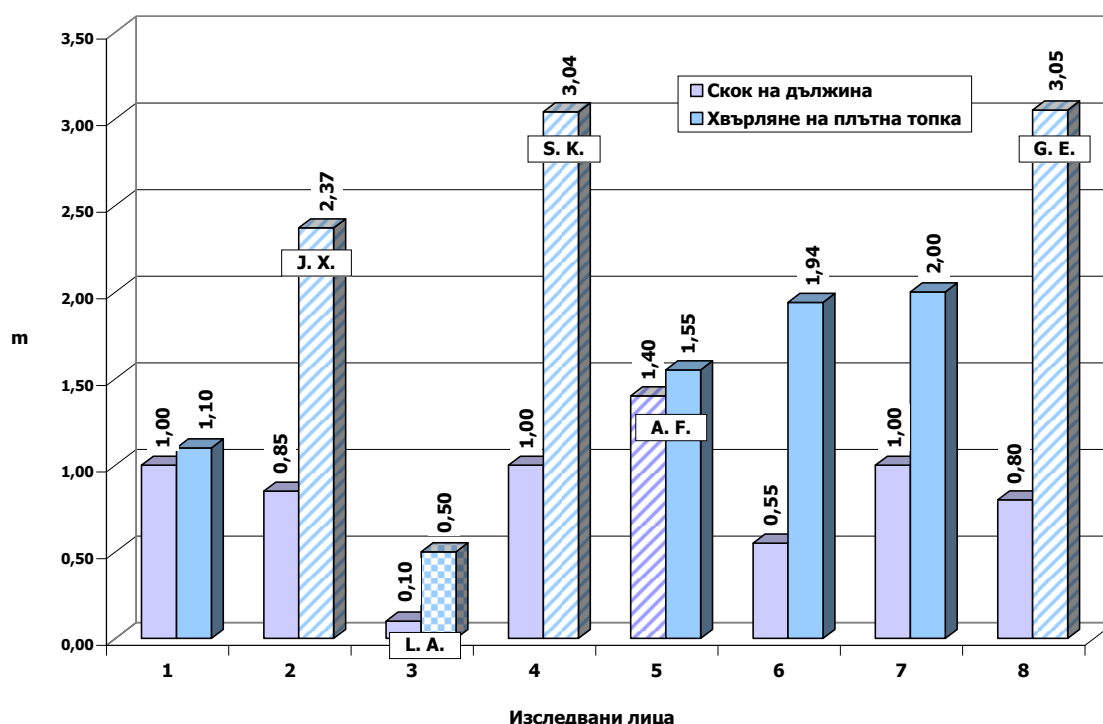


**Figure 7. Individual results on the signs of *physical fitness* (running disciplines) at the *beginning* of the experimental period**

The figure shows that the individual results of the 60 m sprint range between 16.22 s and 36.34 s. G.E. and K.R. covered the distance the fastest, in 16.22 s and 17.00 s, respectively. In contrast, L.A. had a very difficult time with this distance, for which he needed 36.34 s. The results of the other boys with SEN differed by about 1.5–2.5 s, so the scattering of this indicator was on the border of relative stability and instability ( $V_4 = 30.96\%$ , **see Fig. See Table 6**). This gives grounds to assert that the studied group is relatively homogeneous in terms of the speed of the boys included in it.

The same cannot be said about the other studied signs of physical fitness, in which the values of the coefficients of variation are higher than 30%. This gives grounds with a high guarantee probability ( $P_t \geq 95\%$ ) to assert that at the start of the experiment the

studied group was inhomogeneous in terms of speed endurance and explosive strength of both the lower and upper limbs of the boys included in it. Similar differences were observed in terms of strength disciplines (**Figure 9**).



**Figure 9. Individual results on the signs of physical fitness (strength disciplines) at the beginning of the experimental period**

Our intentions to carry out a comparative analysis of the average levels of signs characterizing the physical fitness of children with special needs and their peers without health problems turned out to be unfeasible. The reason for this is the fact that the test exercises applied for control require a certain technique of execution, which turned out to be a serious problem for children with SEN. The only indicator by which the zero hypothesis was checked was "running 200 m". The analysis of its results gives grounds to assert that the group of studied boys with special needs is inhomogeneous in terms of the level of development of the speed endurance of the students included in it and also – their level is significantly lower than that of the children from the same age group who do not have their problems.

The above analysis confirms our thesis that children with special educational needs have a low level of physical fitness, which is why we would like to once again state our confidence that the development and implementation of a specialized methodology for influencing their children in the work with these children physical qualities and specific skills,



based on sports and preparatory games, will increase the overall level of their development and will give them a chance for better social adaptation and a better quality of life.

### **III.1.3. Mean values and variability of traits characterising specific motor skills**

The results of the variational analysis of the signs characterizing the specific motor skills of the studied children at the beginning of the observed period are presented in Table 7.

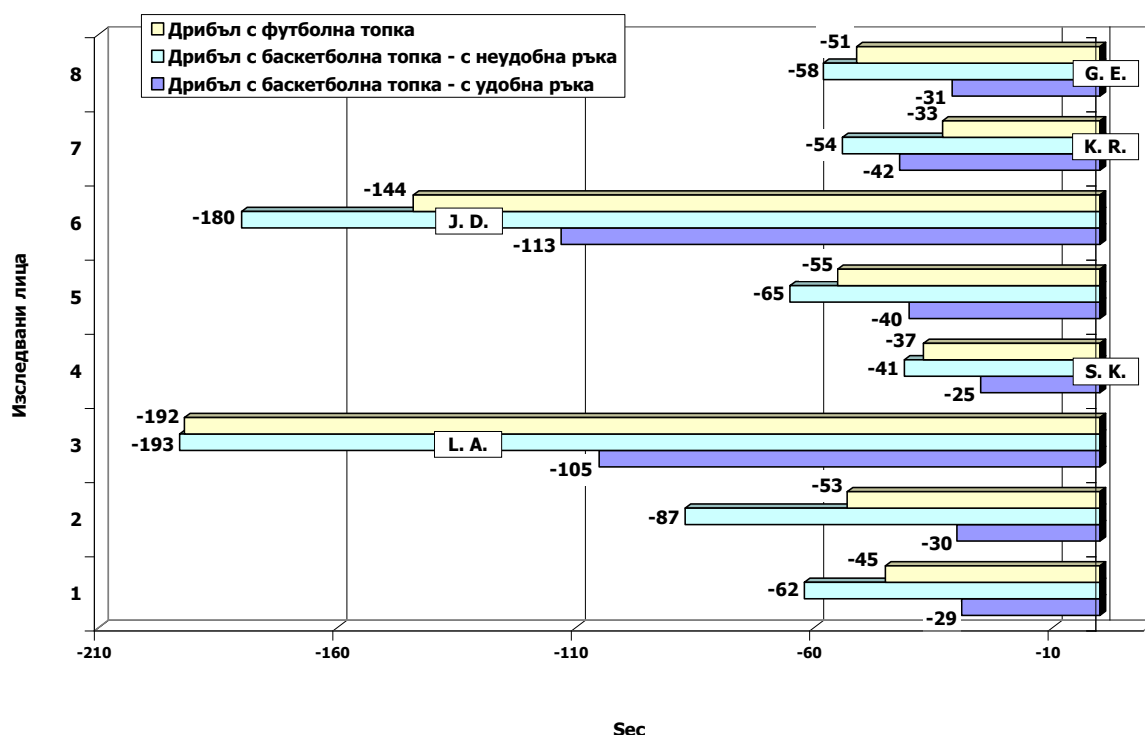
**Table 7. Average values and variability of traits characterizing *specific motor skills* at the *beginning* of the experimental period**

Figure 11 *gives a clear idea of the individual skills of each of the studied boys at the beginning of the experiment to move around the field by dribbling a basketball and a soccer ball.* It is clear from the figure that there are quite large differences between the achievements of different boys, which means large differences in the level of development of the respective skills. S. K. (No. 4) did best, which has passed

<b>Nº</b>	<b>Indicators</b>	<b>Mean</b>	<b>S</b>	<b>V</b>	<b>min</b>	<b>Max</b>
<b>8.</b>	<b><i>Dribbling with a basketball - with a comfortable hand</i></b>	51,88	35,77	68,95	113	25
<b>9.</b>	<b><i>Dribbling with an awkward hand)</i></b>	92,50	59,52	64,35	193	41
<b>10.</b>	<b><i>Shooting in the basket - 10 attempts</i></b>	3,25	2,12	65,23	1	7
<b>11.</b>	<b><i>Feeding and catching to a wall - 10 pieces</i></b>	6,75	2,25	33,33	2	9
<b>12.</b>	<b><i>Soccer ball dribbling - 10 m</i></b>	76,25	58,56	76,80	192	33

through the three routes for a total of 103 s. He was the fastest in dribbling the basketball with his comfortable hand, passing the corresponding route in 25 s. Quite naturally, his lowest score was when dribbling the basketball with the awkward hand.

It is natural that shooting into the basket is a difficult element of the basketball game to perform and requires a higher level of development of accuracy and coordination of the performer. This explains the fact that some of the boys scored on test 10 much lower than those who scored on test 11.



**Figure 11. Individual results on the signs characterizing specific motor skills (dribbling with basketballs and soccer balls) at the *beginning* of the experimental period**

Quite naturally, the presented large differences in the level of development of the signs characterizing the specific motor skills of the studied children with SEN affect the homogeneity of the whole group. The analysis gives grounds to assert that at the beginning of the study, the observed group of 7–8-year-old boys with special educational needs is heterogeneous in terms of the specific skills of the children included in it.

These features in the development of each of the boys allow us to identify both the best aspects of their general preparedness and the least developed qualities and skills in them at the beginning of the experiment. All this helped our work during the sports and pedagogical experiment.

### **III.2. Verification of the effectiveness of the conducted sports and pedagogical experiment**

#### **III.2.1. Significance of observed changes in the level of morphological traits studied**

As stated in the Methodology of the study, the methodology developed by us is based on age-appropriate and adapted to the contingent of the study sports and preparatory games. In our view, their implementation in an inclusive primary school environment will have a positive impact върху двигателните качества и специфичните умения на 6–8-годишните деца със специални потребности.

In order to check the effectiveness of the developed adapted methodology, a second sports and pedagogical testing was carried out at the end of the observed period.

The results of the variational processing of the obtained data on the morphological development of the studied boys after the completion of the applied impact are presented in Table 8.

**Table 8. Mean values and variability of the signs of morphological development of children with SEN at the end of the experimental period**

№	Показатели	Mean	S	V	min	max
1.	<i>Height(cm)</i>	125,25	5,01	4,00	119	134
2.	<i>Weight (kg)</i>	26,00	5,58	21,46	22	39
3.	<i>Body mass index (BMI)</i>	16,65	2,63	15,79	15,36	23,08

As can be seen from the table, at the end of the experiment, the average height of the group was 125.25 cm, and the average weight was 26 kg. The analysis of individual changes in body length showed that for the duration of the experiment, half of the boys did not experience a change in height. For the rest, however, the change is between 2 and 4 cm.

As already noted, however, the presence of changes in the studied traits is not a basis for definitive conclusions if they are insignificant from a statistical point of view. Therefore, the null hypothesis was tested here as well. The results show that in all three indicators characterizing the physical development of the studied boys with SEN, the values of the t-test are lower than the critical one. with a high guarantee probability ( $P_t \geq 95\%$ ), to claim that during the experiment there were no significant changes in the main morphological features of the studied children.

A similar finding can be made with regard to the homogeneity of the studied population - at the end of the period, the group retains its homogeneity in terms of the height of the boys and its relative homogeneity in the other two morphological indicators.

### III.2.2. Significance of observed changes in the level of physical fitness signs studied

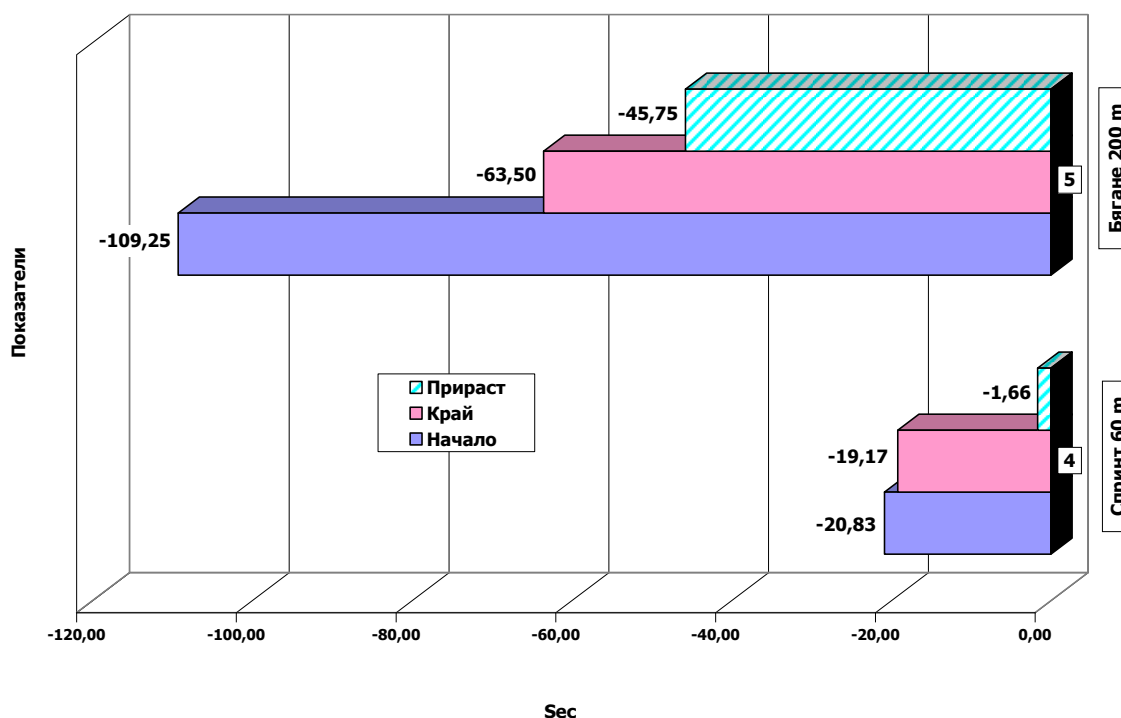
In order to establish the influence of the sports preparatory games applied by us during the experimental period on the level of signs of physical fitness, the results of the final testing were also processed using the variation analysis (**Table 9**).

**Table 9. Mean values and variability of physical fitness signs at the end of the experimental period**

Nº	Indicators	Mean	S	V	min	max
4.	<i>Sprint 60 m (s)</i>	19,17	3,54	18,47	32,04	14,47
5.	<i>Running on 200 m (s)</i>	63,50	46,86	73,80	129	47
6.	<i>Long jump (m)</i>	1,08	0,36	33,29	0,5	1,5
7.	<i>Throwing a solid ball (m)</i>	2,48	0,75	30,27	1,09	3,3

The analysis of the table shows that thanks to the applied effects with the means provided for in the methodology developed by us, positive changes have occurred in the level of development of all observed signs of physical fitness.

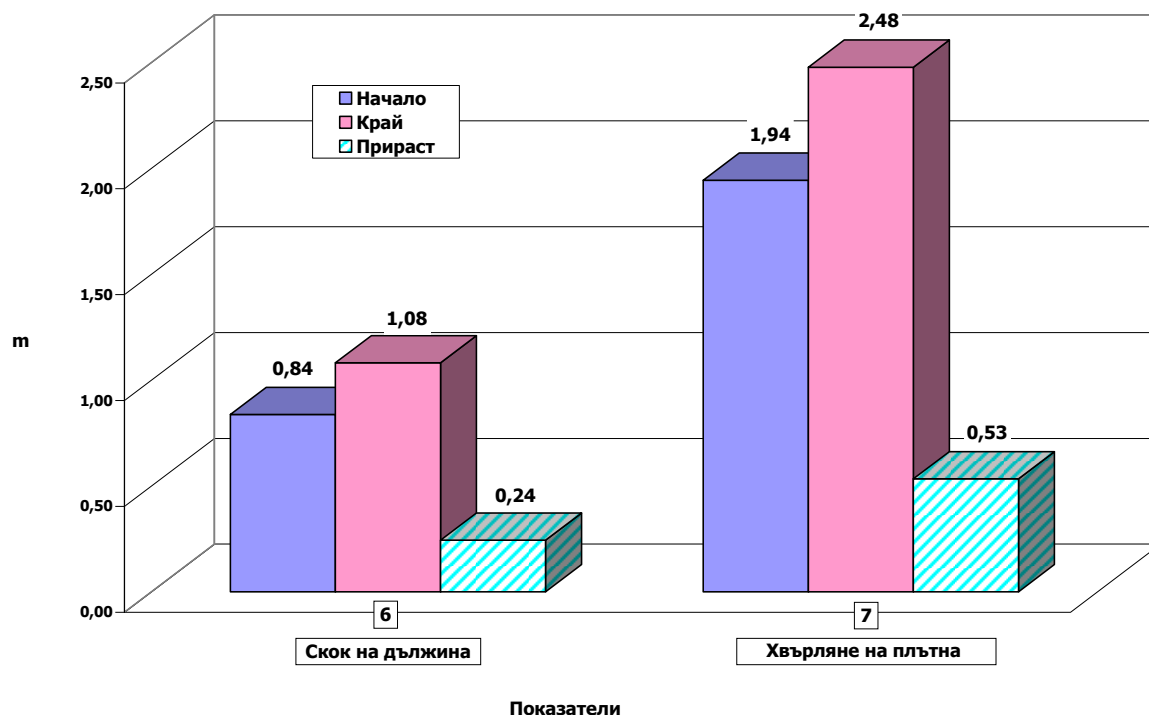
Figure 17 *gives a clear idea of the changes in running disciplines.*



**Figure. 17. Changes in mean levels of signs of *physical fitness* (running disciplines) in boys with SEN for the period under study**

It shows that the group of children with SEN has improved their average achievement in indicator 4 (60 m sprint) by 1.66 s, and that in indicator 5 (200 m run) by 45.75 s.

With regard to strength disciplines, positive changes are also observed (**Figure 18**).



**Figure. 18. Changes in the mean levels of *physical fitness signs* (strength disciplines) in boys with SEN for the period under study**

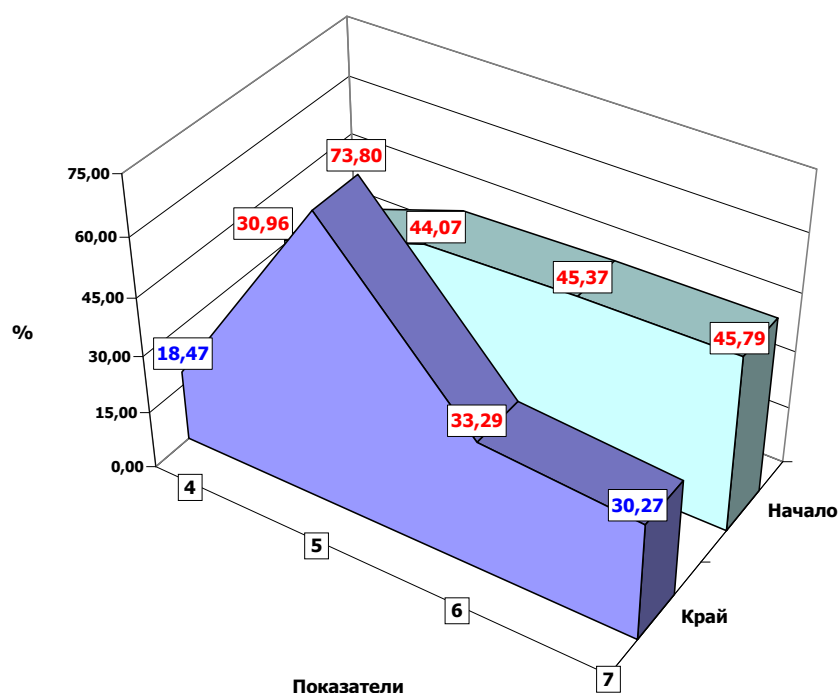
In general, the group achieved a greater length in the jump from a standstill by 24 cm, and in the throwing of a solid ball, the improvement was an average of 53 cm.

Verification of the significance of these observed changes shows that they are insignificant, since  $t$  occupies values between 0.64 and 1.93.

However, we believe that the efforts to apply sports and preparatory games in the work with children with SEN are not in vain. Probably, the time allotted for conducting the experiment (5 months) was not enough for significant positive changes in the level of physical qualities to occur, but we are convinced that this is a good direction for improving the development of these children.

The comparative analysis of the homogeneity of the group at the beginning and at the end of the period of exposure (**Figure 20**) shows that, in general, there has been a stabilization of the indicators of this test group (motor qualities), which is an indicator of an increase in the homogeneity of the studied population. As a result of This, from

inhomogeneous at the beginning of the period, at the end of the period, the group has become relatively homogeneous in terms of sprint capabilities and explosive power of both the lower and upper limbs of the boys included in it.



**Figure. 20. Comparative analysis of changes in the variability of physical fitness signs in boys with SEN for the period under study**

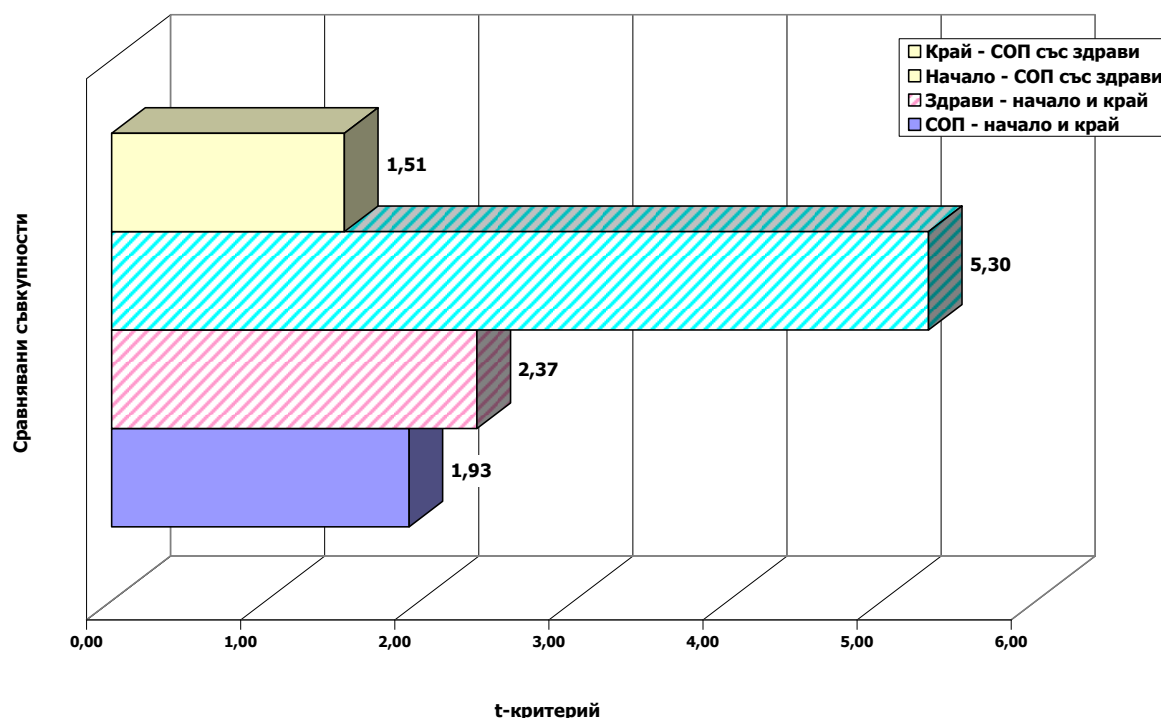
The only exception was observed in terms of the overall endurance of boys (indicator 5). According to this motor quality, the studied population remains inhomogeneous, even the differences between the students deepen.

A generalized idea of the state of the general endurance of the studied boys with SEN, in comparison with their healthy classmates, is given **by Figure 21**.

The figure shows that in children without health problems, there has been a significant improvement in the level of this basic motor quality for general physical fitness. Proof of this is the value of the comparative t-criterion, calculated on the basis of the initial and final results obtained on test 5 (running 200 m) for this population -  $t_{\text{Healthy}} (\text{start} - \text{end}) = 2.37$ . At the same time, however, As noted above, children with SEN also experience positive changes, the assessment of which ( $t_{\text{SEN}} (\text{start} - \text{end}) = 1.93$ ) is very close to the significant one ( $t_{\text{cr.}} = 2,02$ ).

All this affects the final results, according to which, with high statistical reliability ( $P_t \geq 95\%$ ), it can be argued that at the end of the experiment between children with SEN and their classmates without health problems there are no significant differences in the level of development of overall endurance ( $t_{\text{End}} (\text{SOP} - \text{healthy}) = 1.51$ ). This legitimizes running as

the main means of developing the functional state of the body in children with special educational needs.



**Figure. 21. Significance of the differences between the mean levels of indicator 5 (running 200 m) of boys with SEN and their healthy peers**

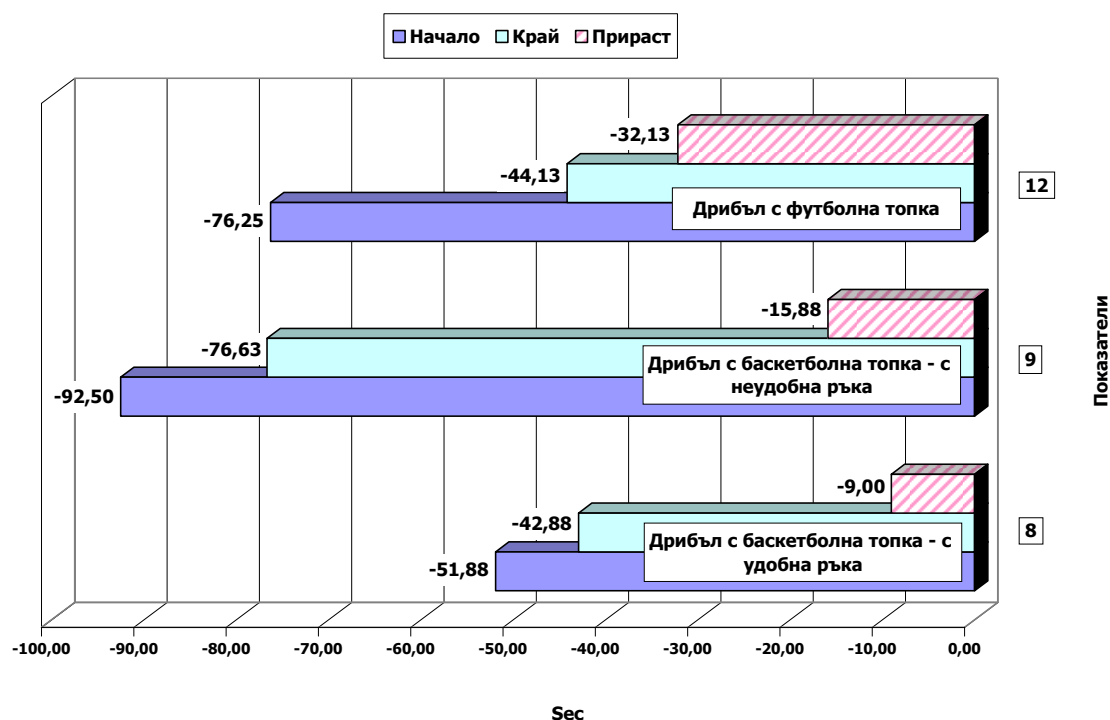
### III.2.3. Significance of the observed changes in the level of the studied traits characterizing specific motor skills

The last group of indicators included in the attached test battery characterizes the level of development of the specific motor skills of the studied students with SEN. As can be seen from **Table 10**, 5 test exercises are assigned to this group, which carry information about the children's skills to handle basketballs and soccer balls and move with them on the field.

It is clear from the table that as a result of the applied methodology for working with children with SEN during the conducted sports and pedagogical experiment, positive changes have occurred in their specific motor skills. The analysis of **Figure 22** shows that thanks to the improved motor skills of children, the average achievement in leading a basketball in motion with a comfortable hand has been improved by 9 s. and this when leading with the awkward hand – by 15.88 s. Soccer Dribbling – Average route time of Indicator 12 has been improved by 32.13 s.

**Table 10. Mean values and variability of traits characterising *specific motor skills* at the end of the experimental period**

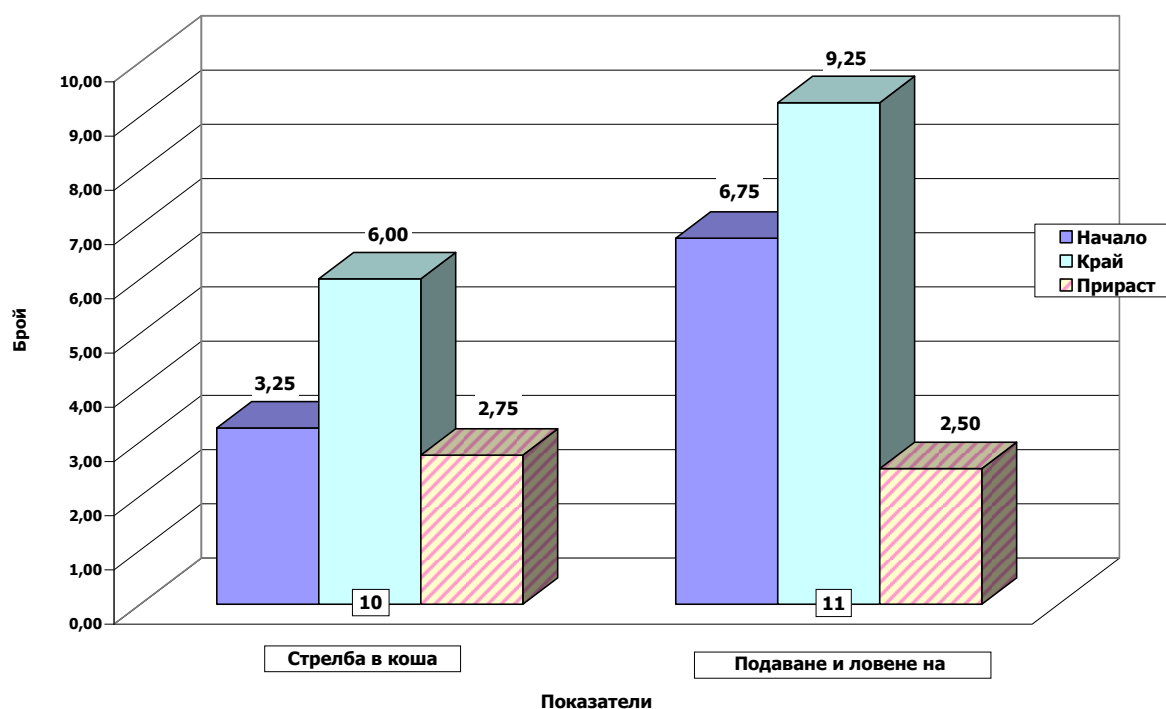
№	Показатели	Mean	S	V	min	max
8.	<i>Dribbling with a basketball - with a comfortable hand</i>	42,88	36,03	84,03	110	19
9.	<i>Dribbling with an awkward hand</i>	76,63	49,56	64,68	165	35
10.	<i>Shooting in the basket - 10 опита</i>	6,00	2,20	36,67	2	8
11.	<i>Feeding and catching to a wall - 10 броя</i>	9,25	2,12	22,92	4	10
12.	<i>Dribbling with a soccer ball - 10 m</i>	44,13	15,16	34,36	70	30



**Figure. 22. Changes in the mean levels of signs characterizing *motor skills* (dribbling with basketballs and soccer balls) in boys with SEN for the period under study**

Information about changes in the average levels of signs characterizing motor skills for shooting in a basketball hoop and passing and catching a basketball in a wall is given by **Figure 23**. The figure shows that during the experiment, children with SEN improved their shooting accuracy by an average of almost 50%.



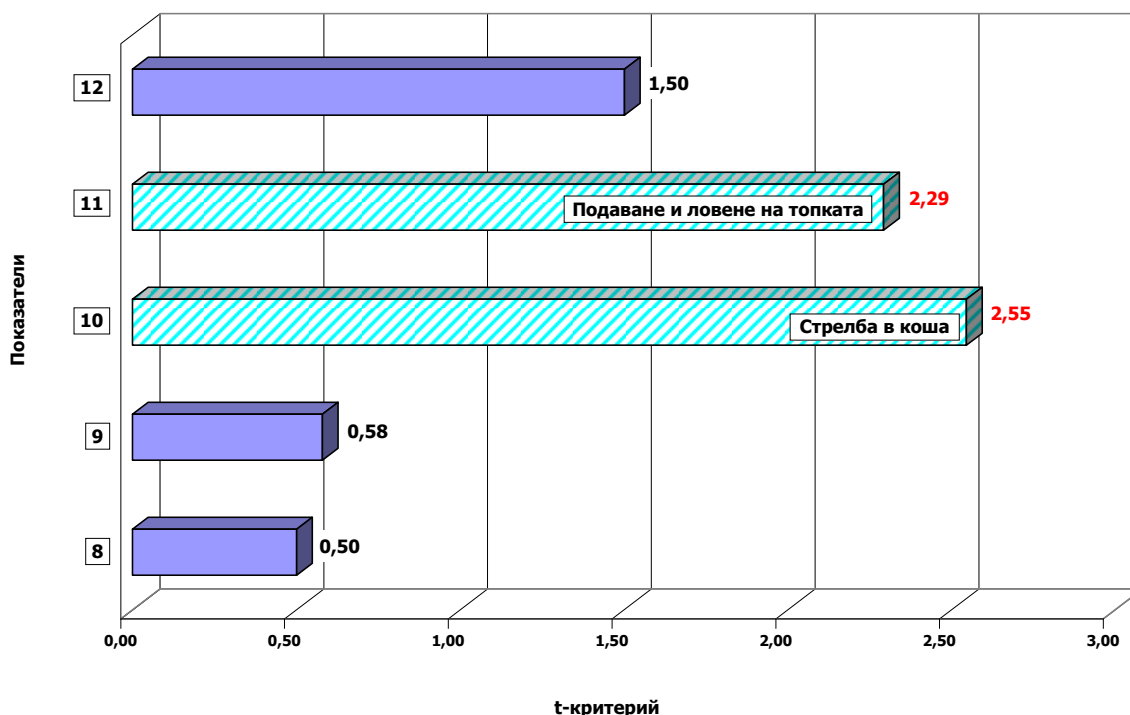


**Figure. 23. Changes in the mean levels of signs characterizing *motor skills* (shooting in the basket and passing and catching the ball) in boys with SEN for the period under study**

The change in average achievement when passing and catching the ball with the help of a wall is relatively smaller, but this is due to the fact that this skill was developed at a higher level at the start of the experiment.

The verification of the significance of the observed changes in the level of specific motor skills of the studied boys with SEN (**Figure 24**) gives grounds to assert that thanks to the applied means from the sports and preparatory games, significant positive changes have occurred in the children's skills to handle the ball on the spot, which is reflected in the improved accuracy of their movements. However, the same cannot be said, for the rest of the signs from this test group. The positive changes in the results do not give grounds to believe that the improved skills for moving around the field with dribbling basketballs and soccer balls are significant.

The analysis gives reason to believe that the experimental methodology should be adjusted in the direction of increasing the relative share of funds provided for the development of specific motor skills for moving on the field with dribbling the ball (basketball and football). This, in our opinion, will increase the level of skills of children with SEN to handle various objects in their daily lives and will increase the quality of their lives.



**Figure. 24. Significance of the changes in the specific motor skills of boys with SEN**

A comparative analysis of the changes in the variability of the traits characterizing the specific motor skills shows that at the end of the experiment there is a stabilization of some of the indicators and an increase in the homogeneity of the group in terms of the skills to handle the basketball on the spot and to move around the field with a football dribble. However, in general, the studied population of children with SEN remains inhomogeneous in terms of the specific motor skills of the children included in it. This leads to the conclusion that during future activities it is necessary to apply the individual approach to working with these children more purposefully.

### **III.3. Assessment of the signs of physical development, physical fitness and specific motor skills of children with SEN**

A very important part of the study is the assessment of the various signs characterizing the level of both physical development and physical qualities, as well as the specific motor skills of children with SEN. The application of assessment, as a procedure related to the optimization of educational work in physical education and sports activities, will allow physical education teachers, as well as other specialists working with this category of people, to get an idea of both the more developed and the less developed qualities and skills at the given stage of the child's development. On this basis, individual optimization models for each of the children will be developed. It is imperative to emphasize here that the

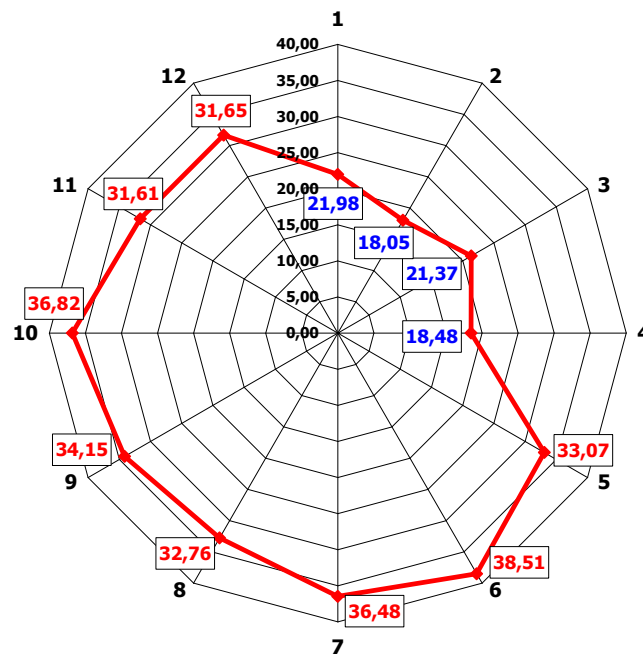
logic of the application of such models requires in the future the accents in working with a particular individual to be directed to the development of the signs for which the grades are the lowest. The efforts made to develop the signs that have received high marks will not have the same effect on the overall level of preparation of the child.

In order to solve the purpose and objectives of the study, at the end of the conducted sports and pedagogical experiment, an assessment of the results of the final testing of the students with SEN observed by us was carried out. The scores are calculated in a 50-point point system, which allows the slightest changes in the level of development of the studied traits to be taken into account. We believe that this has made it possible to identify stronger and less developed signs of physical development, physical fitness and specific motor skills. On this basis, in accordance with the evaluation mechanisms, individual optimization models have been developed for each of the children, which will allow teachers to take adequate measures to increase the effectiveness of future work in physical education and sports.

On the basis of all assessments, the so-called "S" were calculated for each of the boys. average aggregate assessments, which can serve as aggregated individual assessments of physical development and specific fitness.

As mentioned above, with a view to the future improvement of the work with the children with SEN studied by us, the so-called individual optimization models have been developed. As an example, here we present the model of the best prepared boy S. K. (**Figure 27**).

The analysis of the model gives grounds as the strongest points in the preparation of S. K. to determine: *the explosive power of the lower limbs, the accuracy of shooting in the basket and the explosive power of the upper limbs*. As can be seen, however, S. K. The fact that he has a relatively short stature and low body mass is, of course, not a problem, but special attention should be paid to the low level of development of his speed at short distances (indicator 4 – T4 = 18.48 points). This gives grounds to determine as the main focus in the future for this child, work to develop the speed of movement on the field without the ball.



**Figure. 27. Individual optimization model of S.K.'s physical development, physical fitness and specific motor skills. (Nº 4)**

#### **III.4. Factor structure of physical development, physical fitness and specific motor skills of children with SEN**

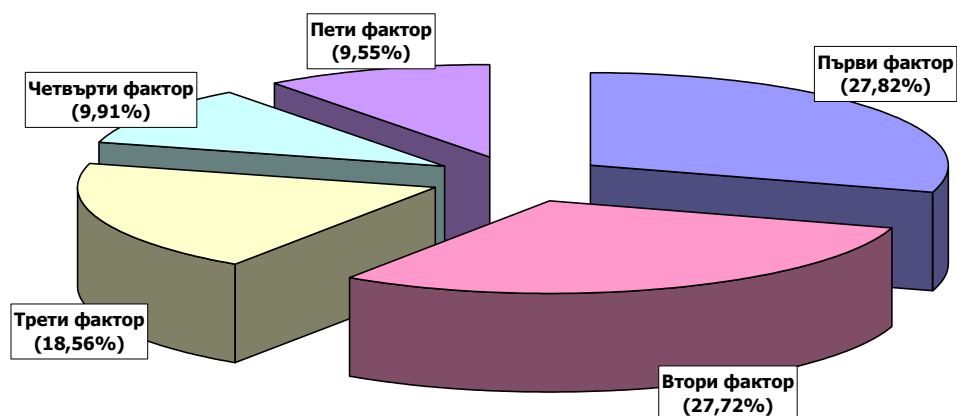
The mechanism for applying signal grades T as optimization criteria, mentioned in the previous section, allows the accents in the work with children to be determined on the basis of the current state of development of their motor qualities and skills. For the needs of optimization, however, especially important information is provided by the so-called. factor structures and the derived main factors.

The factors are derived on the basis of the common similar characteristics that objectively exist in the studied indicators and allow to reveal some ability (property) of the studied object or set depending on the motor activity exercised.

As can be seen from **Figure 29**, the factor structure of the physical development, physical fitness and specific motor skills of the studied Israeli 6-8-year-old boys with SEN is determined by 5 main factors that explain a very high percentage of the baseline variance (93.56%) of the phenomenon studied.

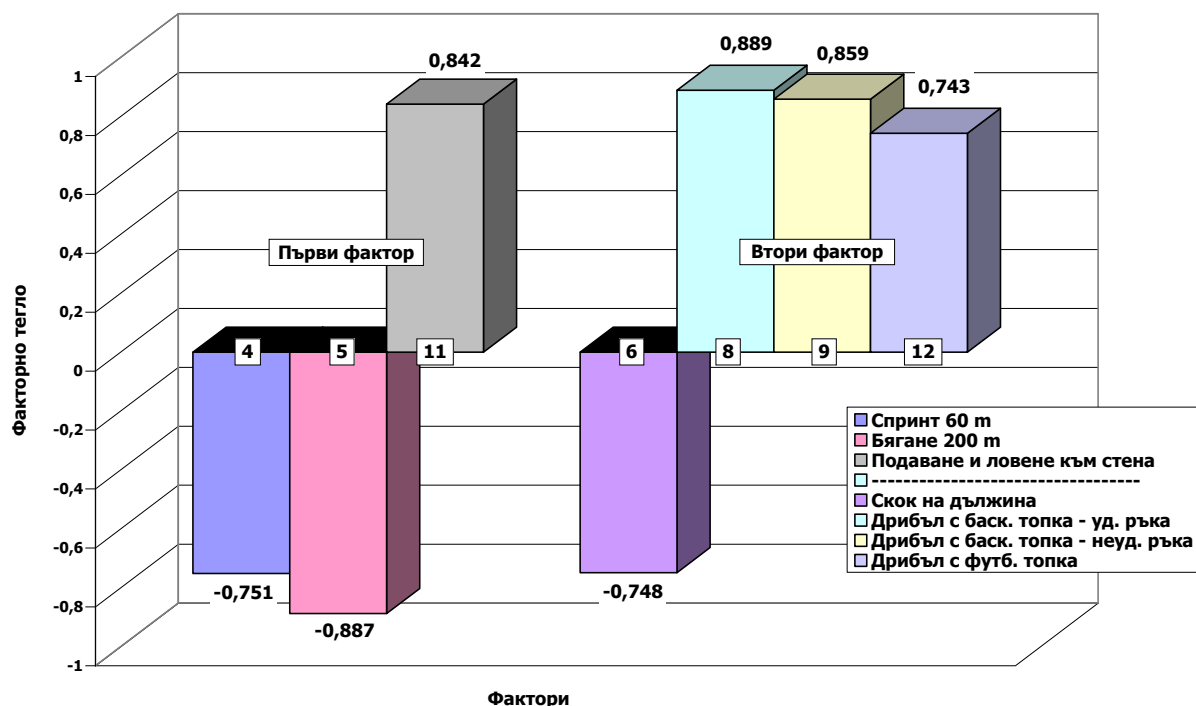
Analysis of the figure shows that the first two factors have very close relative shares (27.82% and 27.72%, respectively). A similar dependence was observed in the last two factors, which explained respectively 9.91% and 9.55% of the baseline variance of physical

development, physical fitness and specific motor skills of the studied boys with special educational needs.



**Figure 29. Relative shares of the baseline dispersion of physical development, physical fitness and specific motor skills of the studied boys explained by each factor with SOP**

**The first factor** is mainly related to the running abilities of children with SEN and reveals the high importance of overall endurance and speed of movement over short distances. These signs have a positive effect on the boys' ability to make successful passes into the wall, followed by catching a basketball.) with indicators 5, 4 and 11 (-0.887, -0.751 and 0.842 respectively). This gives grounds for the prize in the factor structure of physical development, physical fitness and specific motor skills of the studied boys with SEN to be assigned to "**the general endurance and speed of movement over short distances, which have a positive impact on the boys' ability to successfully pass and catch the ball**".



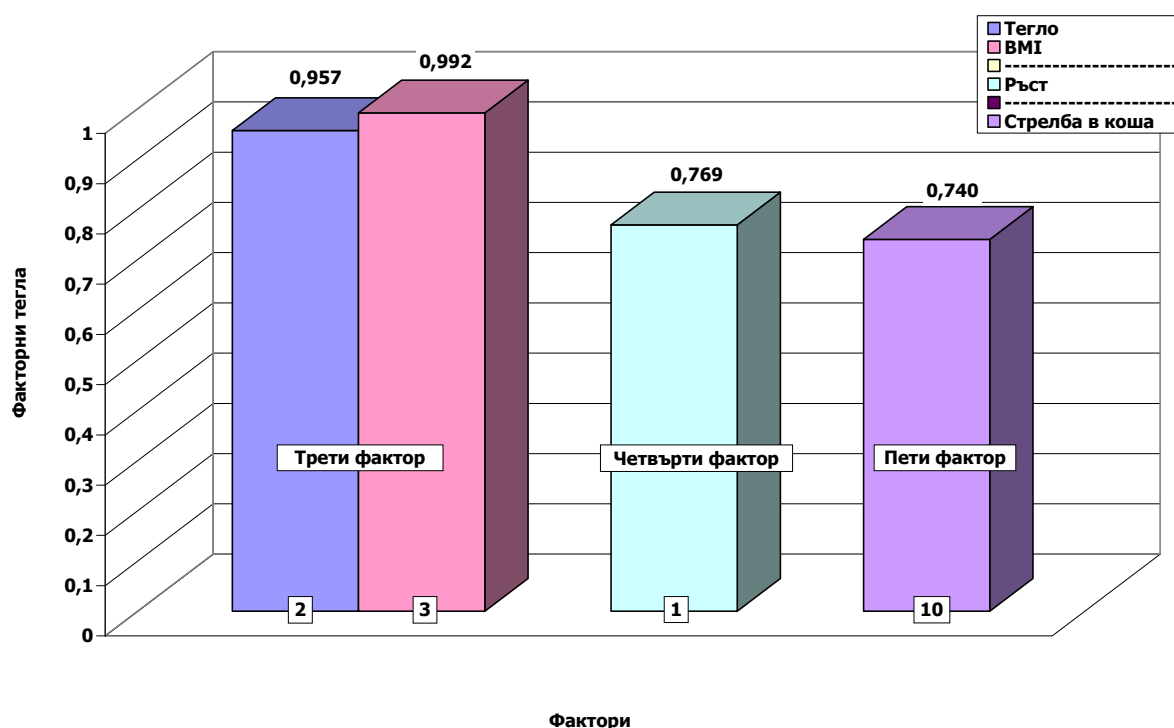
**Figure 30. Factor structure of physical development, physical fitness and specific motor skills of the studied boys with SEN – first and second factors**

**The second factor** explains almost the same relative share as the first (27.72%). Here, 4 of the studied characteristics are distinguished with the highest factor weights (**Figure 30**). The highest values (0.889 and 0.859) are observed in indicators 8 and 9 (respectively "dribbling with a basketball with a comfortable hand" and "dribbling with a basketball with an uncomfortable hand"). -0.748) and indicator 12 (dribble with a soccer ball, 0.743). The factor can be identified as "the **ability to move around the field by dribbling both a basketball and a soccer ball.**"

**The third factor** (18.56%) can be defined as a "**morphological factor**" revealing the influence of body mass (weight and body mass index) on the development of motor skills and specific skills of children with SEN (**Figure 31**).

**The fourth factor** (9.91%) can also be referred to as "**morphological**". It complements the third factor and determines the place in the factor structure of the body length (height) of boys (**Figure 31**).

**The fifth factor** (9.55%) can be identified as "**basketball hoop shooting efficiency**" - **Figure 31**. It reveals the importance of the accuracy of the movements of the studied boys, which depends on their ability to concentrate and determine the magnitude of the distance at which they are from the basket.



**Figure 31. Factor structure of physical development, physical fitness and specific motor skills of the studied boys with SEN – third, fourth and fifth factors**

**In conclusion**, it should be emphasized that the identified factors, as optimization criteria, determine the priorities in the future work with children with special educational needs. This gives grounds to review the developed methodology and, if necessary, to carry out a new arrangement of the intended impacts by means of sports and preparatory games.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

The analyses and generalizations made above give grounds to formulate some main conclusions and recommendations for practice.

It is necessary to specifically note here that the presented conclusions and recommendations are valid only for Israeli children (boys) from the autism spectrum of the age group of 7-8 years, taught in the inclusive environment of primary school.

1. It can be rightly argued that at the start of the sports and pedagogical experiment, in general, the morphofunctional development of the studied Israeli children with SEN did not differ significantly from that of their classmates without healthy problems and more - during the experiment there were no significant changes in the level and variability of the main morphological features of the studied children.

2. At the beginning of the period, the studied group was relatively homogeneous in terms of the speed of the boys included in it. However, inhomogeneity is observed both in terms of the other signs of physical fitness and in terms of the specific skills of children.

3. Thanks to the applied influences with the means provided for in the methodology developed by us, during the experiment there were positive changes in the level of development and homogeneity of all observed signs of physical fitness.

4. The tools applied during the experiment from the sports and preparatory games have caused significant positive changes in the children's skills to handle the ball on the spot, which is reflected in the improved accuracy of their movements. However, the same cannot be said in terms of their skills for moving on the field with dribbling.

5. Despite the increase in the homogeneity of the group in terms of the skills to handle the basketball on the spot and to move around the field with football dribbling, in general, the studied population of children with SEN remains inhomogeneous in terms of specific motor skills.

6. We believe that the time allotted for conducting the experiment (5 months) was not enough for significant positive changes in the level of development of all physical qualities and motor skills of children with SEN.

7. The assessment made it possible to identify both the strengths and weaknesses in the development of the main signs of physical development, physical fitness and specific motor skills of children with SEN and on this basis to determine the accents in the future individual work with each of them.

8. The factor structure of physical development, physical fitness and specific motor skills, as well as the derived factors, as optimization criteria, determine the priorities in the future work with children from the studied population, which should be directed to:

- development of general endurance and speed of movement over short distances, which have a positive impact on the boys' ability to successfully pass and catch the ball;
- developing the ability to move around the field with dribbling with both basketball and soccer balls;
- control over morphological signs, expressed in maintaining weight and body mass index in the normal zone for each child;
- increasing the effectiveness of shooting at a target (in the basketball basket), which leads to an improvement in the accuracy of movements of the studied boys and their ability to concentrate and determine the magnitude of the distance they are at from the target.



***Recommendations:***

1. Children who are outside the healthy body weight zone should be monitored periodically. They should be given specialized care in order to compensate for existing deviations from the norm.

2. Running should be applied as the main means for developing the functional state of the body in children with special educational needs.

3. Before it is proposed for wider implementation in practice, some adjustments should be made in the experimental methodology, aimed at increasing the relative share of funds provided for the development of specific motor skills for moving on the field with dribbling (basketball and football).

4. During future activities, the individual approach to working with children with special educational needs should be applied more purposefully.

5. To increase the duration of the period envisaged for the application of the developed specialized methodology - 5 months, not enough for significant positive changes in the level of development of children with special educational needs.