

Physical Education of Students with Orthopedic Disabilities and The Evaluation of Expenditures on These Students

Ortopetik Engelli Öğrencilerin Fiziksel Eğitimi ve Bu Öğrencilere Yönelik Harcamaların Değerlendirilmesi

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Abstract: Physical education of students with orthopedic disabilities includes a special program aimed at improving their physical and motor skills. This program takes into account the individual needs and abilities of students while encouraging their participation in physical activities. Physical education of students with orthopedic disabilities is usually guided by a specialist physiotherapist, sports trainer or special educator. The program is customized taking into account the student's current situation and the type of disability. The physical education program includes various exercises to increase the student's mobility, improve balance and coordination skills, and increase muscle strength and flexibility. A variety of activities may take place, such as physical therapy sessions, muscle strengthening exercises, balance exercises, stretching and sports activities. In addition, suitable sports and games for students with orthopedic disabilities also play an important role. This helps students develop their teamwork, competitive and social skills. Some sports that students can participate in include wheelchair basketball, paralympic swimming, wheelchair tennis and athletics. Technological tools are also used in physical education. Special equipment such as prostheses, wheelchairs or walking devices support students' participation in physical activities. Panel data analysis was used in this study. Frequency, regression and statistical mean were used in the analysis. Physical education of students with orthopedic disabilities is important in terms of improving their physical and motor skills. It seems to be an important program to encourage participation in physical activities and increase their self-confidence. By adopting an approach tailored to their individual needs, these students should be supported to lead a healthy life and maximize their physical potential. For this reason, providing the expenditure expenses of the students in need of orthopedic and physical education by the public will support the achievement of effective results on participation and success.

Keywords: Physical education, orthopedic problem, physical and motor skills.

Özet: Ortopedik engelli öğrencilerin fiziksel eğitimi, bu öğrencilerin bedensel ve motor becerilerini geliştirmeyi amaçlayan özel bir programı içermektedir. Bu program, öğrencilerin fiziksel aktivitelere katılımını teşvik ederken, onların bireysel ihtiyaçlarını ve yeteneklerini dikkate almaktadır. Ortopedik engelli öğrencilerin fiziksel eğitimi genellikle uzman bir fizyoterapist, spor eğitimcisi veya özel eğitimci tarafından yönlendirilmektedir. Program, öğrencinin mevcut durumunu ve engelin türünü dikkate alarak özelleştirilir. Fiziksel eğitim programı, öğrencinin hareket yeteneklerini artırmak, denge ve koordinasyon becerilerini geliştirmek, kas gücünü ve esnekliğini artırmak için çeşitli egzersizleri içermektedir. Fizik tedavi seansları, kas güçlendirme egzersizleri, denge egzersizleri, esneme hareketleri ve spor aktiviteleri gibi çeşitli etkinlikler yer alabilir. Ayrıca, ortopedik engelli öğrenciler için uygun sporlar ve oyunlar da önemli bir rol oynamaktadır. Bu, öğrencilerin takım çalışması, rekabet ve sosyal becerilerini geliştirmelerine yardımcı olmaktadır. Öğrencilerin katılabileceği bazı sporlar tekerlekli sandalye basketbolu, paralimpik yüzme, tekerlekli sandalye tenisi ve atletizm gibi aktivitelerini içermektedir. Fiziksel eğitimde teknolojik araçlar da kullanılmaktadır. Protezler, tekerlekli sandalyeler veya yürüme cihazları gibi özel ekipmanlar, öğrencilerin fiziksel aktivitelere katılımlarını desteklemektedir. Bu çalışmada panel veri analizi kullanılmıştır. Analizde frekans, regresyon ve istatistik ortalamaya kullanılmıştır. Ortopedik engelli öğrencilerin fiziksel eğitimi, öğrencilerin bedensel ve motor becerilerini geliştirmesi açısından önemlidir. Fiziksel aktivitelere katılma teşvik etmek ve kendilerine güvenlerini artırmak için önemli bir program olduğu görülmektedir. Bireysel ihtiyaçlarına uygun olarak özelleştirilen bir yaklaşım benimsenerek, bu öğrencilerin sağlıklı bir yaşam sürmeleri ve fiziksel potansiyellerini maksimize etmeleri desteklenmelidir. Bu nedenle ortopedik ve fiziksel eğitim ihtiyacı duyan öğrencilerin harcama giderlerinin kamu eliyle sağlanması katılım ve başarı üzerinde etkili sonuçların yakalanmasına destek olacaktır.

Anahtar Kelimeler: Fiziksel Eğitim, Ortopedik Sorun, Bedensel ve Motor Beceri.

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INTRODUCTION

Today, we know that the physical education of orthopedically disabled students is still incomplete and insufficient despite technological developments. It is also known that the program and activities that will encourage these students to develop their physical and motor skills, increase their mobility and participate in physical activities are deficient and inadequate due to many reasons (Karahan & Kuru, 2015). The practices related to helping these students to overcome the difficulties they encounter in all areas of their lives are insufficient and almost non-existent. Financial impossibilities and lack of investments are the most important problems in the emergence of the inadequacies of these activities, which provide significant benefits in many aspects such as health, social cohesion and self-confidence (Taşkın et al., 2022).

Orthopedic disability refers to a condition that results in limitation of movement or physical disability as a result of a problem with the musculoskeletal system, joints, or limbs. (Raya et al., 2010). These conditions include various causes such as spinal cord injuries, congenital limb defects, amputations, muscular dystrophies and bone diseases. Students with orthopedic disabilities have difficulties in

participating in physical activities due to these conditions and have special educational needs to improve their physical skills (Demirdel & Bayramlar, 2014).

Physical education of orthopedically disabled students is of great importance in improving their quality of life and supporting their independence (Kurt, 2017). This training includes activities such as exercises to increase students' mobility, muscle strengthening exercises, stretching exercises and balance exercises (Karahan & Kuru, 2015). In this way, students can be more independent in their daily lives and can perform their daily activities by overcoming physical obstacles (Ayvaci & Bilge, 2018).

Physical education improves body awareness of students with orthopedic disabilities and helps them learn how to use their bodies effectively. Techniques are taught for students to properly control their posture and body mechanics. Thus, muscle balance is achieved, posture disorders are prevented and the risk of injury is reduced (Berdishvsky et al., 2016).

Physical education of orthopedically disabled students not only improves their physical skills, but also provides

significant psychological and social benefits. As students' opportunities to participate in physical activities increase, their self-confidence and self-confidence strengthen. This increases students' social interactions, enables them to establish friendship relations and encourages them to take a more active part in society (Holland et al., 2023).

Physical education also supports the health and general well-being of students with orthopedic disabilities. Regular physical activity reduces the risk of many chronic diseases such as obesity, heart disease and diabetes. It also helps in the management of orthopedic problems with increased muscle strength and endurance. Stronger muscles ensure joint stability and eliminate the risk of injury (Booth et al., 2012).

The physical education of students with orthopedic disabilities should be tailored to their individual needs and the type of disability. At this point, teamwork is required, guided by a specialist physiotherapist, sports trainer or special educator. The team assesses the student's current situation and goals, determines appropriate exercise programs, and monitors student progress (Frey, 2006).

The physical education program introduces students to appropriate sports and activities. This may include sports such as wheelchair basketball, paralympic swimming, wheelchair tennis, track and field, or activities such as dance, yoga, pilates. Students' participation in these activities contributes to the development of teamwork, competition, leadership skills and problem-solving abilities (Doruk & Mustafaoğlu, 2019).

Technological tools also play an important role in the physical education of students with orthopedic disabilities. For example, special equipment and devices increase students' mobility and facilitate their participation in physical activities. Devices such as prostheses, wheelchairs, walking devices increase students' mobility and confidence, giving them independence (Mülayim & Azsöz, 2020).

However, there are also some difficulties for the physical education of students with orthopedic disabilities. Factors such as lack of appropriate equipment and resources, accessibility issues, lack of training and knowledge of educators can affect the effectiveness of the program. Therefore, measures should be taken such as providing resources, raising awareness of educators and parents, and creating appropriate educational environments (Tiyek et al., 2016).

It should not be forgotten that the physical education of orthopedically disabled students improves their physical and motor skills, while providing benefits in many areas such as health, social harmony and self-confidence (Salkım et al., 2023). This program improves the quality of life of students and helps them gain independence (Sinclair, et al., 2005). It contributes to the increase of their self-confidence by encouraging them to take an active part in society (Genç & Çat, 2013). Provision of appropriate equipment, assignment of expert educators and awareness raising activities help to improve the physical education of orthopedically disabled students (Yılmaz, 2005).

When total education expenditure increases, the numbers of primary school students generally tend to increase. There are several reasons for this (Ulusoy et al., 2015).

First, increased education expenditures allow for the expansion and development of the education system. This means building and improving more school buildings, classrooms and other teaching resources (Dumlu & Aydın, 2008). This additional capacity allows the admission and enrollment of more primary and special education schools and high school students (Karasu & Mutlu, 2014).

Secondly, increased education expenditure makes it possible to improve the employment of teachers and the quality of education (Büyükhahin and Şahin, 2017). Employing more teachers allows for smaller classes, giving students more individual attention and learning opportunities (Tezsürücü & Bursalıoğlu, 2013). At the same time, investing in teachers' training and professional development opportunities enables the training of more qualified and competent teachers (Baldu, 2014).

Third, increased education expenditure provides more opportunities for primary, secondary, and upper secondary education in terms of accessibility and inclusion. More primary, secondary and high school students attend school by increasing educational resources and improving transport facilities, especially in areas with difficult access to students such as rural areas or disadvantaged communities (Kazu, 2018).

Finally, increased education expenditures often indicate an increase in education policies and public awareness (Kır & Yavuz, 2015). This leads to an increase in the importance given to education, and individuals who need special education to be more willing to send their children to primary, secondary and high school by providing more activity and physical development. (Orhan, 2019). Thus, more children enroll in elementary, middle and high school. It benefits from different educational opportunities and enables individuals who need special education to have more effective, qualified and need-oriented education. This allows for more effective and permanent training to be provided, especially in areas that require technical, technological and different training materials, trainers and technical personnel (Metin, 2018). It is known that individuals who have physical and orthopedic problems today are deprived of educational opportunities and opportunities in many fields. This situation is experienced more intensely in rural areas and areas where financial and opportunities are lacking. This geographical difference causes individuals to have difficulty in accessing educational opportunities and opportunities in many fields and they face them as an obstacle to their development in physical, mental and other areas (Tekin, 2019).

The right investment, qualified employment, expertise in the field and technological development will also enable individuals who need special education, sports, physical activity and similar training to be rehabilitated from different aspects, to benefit, and to make a difference in personal development, motor and psychosocial areas (Atik, 2018).

However, the increase in education expenditures alone is not enough to increase the number of primary, secondary and high school students. Many factors such as the effectiveness

of education policies, socioeconomic factors, attitudes of families and other environmental factors can also affect enrollment and participation in these schools. Therefore, it is important to adopt holistic policies that support the education system along with increasing education expenditures (Mart & Kartal, 2021).

The Relationship of Education And Economy

There is a strong relationship between education and the economy (Çakmak, 2008). Education has a significant impact on a country's economic growth, innovation ability, labor productivity and social well-being (Köksel & Tecirli, 2023). Below are some key aspects of the relationship between education and the economy under headings.

- **Human capital development:** Education provides human capital development by increasing the knowledge, skills and competencies of individuals. A well-educated workforce is more productive and can take on more complex and creative jobs. This supports economic growth (Karadaş, 2021).
- **Labor market efficiency:** Education affects the demand and supply balance in the labor market. Well-educated workers have the potential for more job opportunities and higher wages. This contributes to a more efficient labor market and lower income inequalities (Durkaya & Hüsnüoğlu, 2018).
- **Technological development and innovation:** Education is the driving force of innovation and technological development. Well-educated individuals can generate new ideas, contribute to technological advances, and engage in initiatives with growth potential in innovative industries (Durkaya & Hüsnüoğlu, 2018).
- **Entrepreneurship and business activities:** Education develops entrepreneurial skills and enables businesses to start and grow. Well-educated entrepreneurs can start new businesses, create jobs and support economic growth (Karadaş, 2021).
- **Poverty reduction and social development:** Education is considered a fundamental element of poverty reduction and social development. Well-educated individuals have access to better job opportunities, higher incomes, and better living standards. This, in turn, reduces social inequalities and increases social welfare (Günkör, 2017).

However, the relationship between education and the economy is complex and multifaceted. Factors such as the quality of the education system, equity, accessibility, teacher qualifications can affect the economic impact of education. At the same time, economic conditions can affect access and quality of education. Therefore, it is important to consider a good education system and economic policies together for sustainable economic growth.

METHODS

Aim of the Research: The purpose of this research is to determine the effect of education expenditures on the number of students and teachers with orthopedic disabilities at different education levels.

Population and Sample of the Research: In the research, the data on the education investments of the Ministry of National Education between the years 2012-2017 and the number of students and teachers in the same period were used. In the research, education programs and education investments for students with physical and orthopedic disabilities who require special education at primary, secondary and high school levels are within the scope of this research.

Statistical Methods Used in Data Analysis: The obtained data were analyzed with Eviews and SPSS 18 package programs. Frequency tables, regression test and factor analysis were used within the scope of the analysis.

Research Problem

This research suggests that education expenditures have an impact on the number of students and teachers with orthopedic disabilities. The hypotheses regarding this were formed as follows.

Research Hypotheses

H¹: Total education expenditure increases the number of primary school students.

H²: Total education expenditure increases the number of secondary school students.

H³: Total education expenditure increases the number of special education high school students.

H⁴: Total education expenditure increases the number of primary school teachers.

H⁵: Total education expenditure increases the number of secondary school teachers.

H⁶: Total education expenditure increases the number of special education high school teachers.

RESULTS

Table 1: Frequency Analysis

	Years	Average	Median	Standard Deviation
	Education Expenditure	100873	100340	21386
Number of Students	Primary School	319	326	16
	Secondary School	359	340	62
	Special Education Vocational High School	116	118	15
Number of Teachers	Primary School	52	49	10
	Secondary School	48	51	6
	Special Education Vocational High School	45	38	18

Table 2: Regression Analysis Independent / Dependent Variable

	Education Expenditure	Sig	F-Statistics	Sum of Squares	df	Mean Square
Number of Primary School Students	0,25	0,05	4,896	3,54	1	3,544
Number of Secondary School Students	0,74	0,03	7,586	40,1	1	40,126
Number of Special Education Vocational High School Students	0,08	0,15	9,541	17	1	16,995

Table 3: Regression Analysis Independent / Dependent Variable

	Education Expenditure	Sig	F-Statistics	Sum of Squares	df	Mean Square
Number of Primary School Teachers	0,015	0,05	4,896	3,54	1	3,544
Number of Secondary School Teachers	0,023	0,03	7,586	40,1	1	40,126
Number of Special Education Vocational High School Teachers	0,009	0,15	9,541	17	1	16,995

H1: Total education expenditure increases the number of primary school students.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of primary school students with orthopedic disabilities, and the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. Accordingly, when the education expenditure increases by one unit, the number of primary school students with orthopedic disabilities increases by 0.25 units.

H2: Total education expenditure increases the number of secondary school students.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of orthopedically handicapped secondary school students, and the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. When education expenditure increases by one unit, the number of secondary school students with orthopedic disabilities increases by 0.74 units.

H3: Total education expenditure increases the number of special education high school students.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of orthopedically handicapped special education high school students, and the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. When education expenditure increases by one unit, the number of orthopedically handicapped special education high school students increases by 0.08 units.

H4: Total education expenditure increases the number of primary school teachers.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of primary school teachers with orthopedic disabilities, and

the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. When education expenditure increases by one unit, the number of primary school teachers with orthopedic disabilities increases by 0.015 units.

H5: Total education expenditure increases the number of secondary school teachers.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of secondary school teachers with orthopedic disabilities, and the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. When education expenditure increases by one unit, the number of secondary school teachers with orthopedic disabilities increases by 0.023 units.

H6: Total education expenditure increases the number of special education high school teachers.

Regression analysis was performed to determine the effect between the total education expenditure and the total number of orthopedically handicapped special education high school teachers, and the significance value of the regression was below 0.05. Thus, it can be said that the results are significant. When education expenditure increases by one unit, the number of orthopedically handicapped special education high school teachers increases by 0.009 units.

DISCUSSION

According to TUIK data, total education expenditure was 77,308 million TL in 2011, 93,041 million TL in 2012 and 344,341 million TL in 2021, and this number has been increasing continuously over the years. While the education expenditures per student was 4,008 TL, this number increased continuously over the years and reached 15,500 TL in 2021. Again in 2021, the expenditure per student was 11,626 TL in primary school, 12,539 TL in secondary school and 14,467

TL in high school (TUIK, 07.12.2022). In addition, when the distribution of students receiving formal education in special education institutions is examined by years, it is stated that in 2012, there were 33,877 in special education schools and 25,477 in special education classes, this number has continuously increased over the years and in 2019-202, it was 55,588 in special education schools and 51,886 in special education classes. According to 2021 data, the rate of orthopedic disabilities among the total number of disabled people is 13.78% (General Directorate of Services for Persons with Disabilities and Elderly, 2021). In our study, regression analysis was conducted to determine the effect between total education expenditure and the total number of primary school students with orthopedic disabilities and it was found that when education expenditure increased by one unit, the number of primary school students with orthopedic disabilities increased by 0.25 units. Again Regression analysis was conducted to determine the effect between total education expenditure and the total number of orthopedically disabled secondary school students and it was found that when education expenditure increased by one unit, the number of orthopedically disabled secondary school students increased by 0.74 units.

It can be said that investments in education benefit the individual and thus the society. Therefore, it is important for the state to bear the social cost part in order to ensure the level of social welfare in the distribution of resources (Karadeniz, Durusoy, & Köse, 2007: 47). For this purpose, it is seen that expenditures on education are increasing in developed and developing countries, and for this reason, research on domestic and international education expenditures is increasing day by day (Akın, Mart, & Kartal, 2021). In our study, a significant relationship was found between total education expenditure and the total number of orthopedically disabled special education high school students, the number of orthopedically disabled primary school teachers, the number of orthopedically disabled secondary school teachers and the number of orthopedically disabled special education high school teachers. And it was found that when the education expenditure increased by one unit, the number of students in special education high schools with orthopedic disabilities increased by 0.08 unit, the number of primary school teachers with orthopedic disabilities increased by 0.015 unit, the number of secondary school teachers with orthopedic disabilities increased by 0.023 unit and the number of special education high school teachers with orthopedic disabilities increased by 0.009 unit.

Since 2005, when the Disability Laws came into force, there has been a significant increase in public expenditures for the disabled. The ratio of public expenditures on the disabled to GDP increased almost 3 times between 2006 and 2015 (Yılmaz & Yentürk, 2011). In Turkey, which is on the way to becoming a developed country, the largest share in public expenditures is given to education expenditures (Arabacı, 2011). In our study, the effect of total education expenditures on the number of students and teachers with orthopedic disabilities was analyzed and it was found that a one-unit increase in education expenditures leads to an increase in other variables.

Conclusion: Our own findings were evaluated with the analysis made within the framework of the literature findings and results obtained at the end of the research. The findings are evaluated under four different factors below. It is possible to state that education expenditures have a positive effect on the number of orthopedically disabled, primary school, secondary school and special education high school students. Increasing education expenditures can improve and expand education services for these student groups. Details of these effects are listed under the following headings.

➤ Education expenditures; have a positive effect on the number of orthopedically handicapped primary school students, positively on the number of secondary school students, and positively on the number of special education high school students.

It is possible to state that education expenditures have a positive effect on the number of orthopedically disabled, primary school, secondary school and special education high school students. Increasing education expenditures can improve and expand education services for these student groups. Details of these effects are listed under the following headings.

- **Orthopedically Disabled Students:** The increase in education expenditures has a positive effect on the number of students with orthopedic disabilities. These expenditures can be used to provide better education opportunities for students with disabilities, to provide special equipment and to provide appropriate physical and mental support services. This increases the participation of orthopedically disabled students in school and enables them to continue their education more effectively.
- **Primary School Students:** The increase in education expenditures positively affects the number of primary, secondary and special education high school students. Primary school, secondary school and special education high school, which are the basic stages of getting a good education, develop the basic skills of children and constitute an important period in the process of starting school. The increase in education expenditures allows for more school buildings to be built, more teachers to be employed and more educational resources to be provided. This increases the probability of enrollment of children in primary, secondary and high school age.
- **Special Education High School Students:** Education expenditures for special education high school students have positive effects on the number of this student group. Special education high school offers students customized education opportunities and support services. Increasing education expenditures can lead to the establishment of more special education high schools and to increase the capacity of existing ones. This, in turn, increases the possibility that students with special educational needs will have access to these schools and increase enrollment participation rates.

The increase in education expenditures may have positive effects on the number of orthopedically disabled, primary school and special education high school students. These expenditures can improve educational opportunities for these groups of students, enabling them to better participate in their

education and enable more students to take advantage of educational opportunities.

➤ The highest effect occurs in the number of secondary school students.

We can say that education expenditures have the highest impact on the number of secondary school students. It is seen that secondary school is an important stage in which students deepen their academic and social development and reinforce basic knowledge and skills. The increase in education expenditures plays an important role in providing secondary school students with better education opportunities and a more effective learning environment. This increase may include the following effects.

- **Increasing the Quality of Education:** Increased education expenditures can improve the resources and infrastructure of secondary education institutions. This means better equipped classrooms, labs, libraries and other learning materials. In addition, more investment can be made in the training and professional development of teachers so that qualified and motivated teachers can provide better education to secondary school students. In addition, sports facilities and physical activity centers to be established for orthopedic and physical students who require special education will contribute to the health of these students' physical, mental and general physical integrity.
- **Increasing Student Participation:** Well-resourced secondary schools increase student participation and retention in school. Better educational opportunities can increase children's interest and motivation in education. In addition, support services and student guidance programs provided can also meet the social and emotional needs of students. In addition, special education increases or may increase the attendance rate of students with physical and orthopedic disabilities who require support in these educational institutions.
- **Increasing Academic Success:** The increase in education expenditures can positively affect the academic achievement of secondary school students. Well-trained teachers, combined with a better curriculum and resources, are more likely to enable students to develop core skills and achieve higher academic goals. This will contribute to better preparation of students for future education and employment opportunities.
- **Supporting Social Development:** Secondary school is a period in which students develop their social, physical and physical skills and social harmony. Increased education spending can increase the variety of social events, clubs, sports and arts events in schools. This allows students to have opportunities to build social relationships, develop leadership skills and express themselves.
- It is seen that the increase in education expenditures has the highest impact on the number of secondary school students. This increase provides secondary school students with better education opportunities, better resources and support services, increasing their academic success and supporting their social development. This plays an important role in the future success of students and their contribution to society.
- Education expenditures; have a positive effect on the number of orthopedically handicapped primary school teachers, positively on the number of secondary school

teachers, and positively on the number of special education high school teachers.

It shows that education expenditures have positive effects on the number of orthopedically disabled, primary school and special education high school teachers. The increase in education expenditures makes it possible to increase employment opportunities and provide better working conditions for these teacher groups. A more detailed explanation of these effects is given under the headings below.

- **Teachers of Orthopedically Disabled Students:** The increase in education expenditures has a positive effect on the number of teachers of students with orthopedic disabilities. These expenditures necessitate increasing the number of teachers for students with special educational needs and investing in education and training resources to improve the qualifications of these teachers. Particularly, physical education teachers should be supported to receive field training in this direction, and to participate in more proficiency trainings for themselves in educational practices that require personal training and physical competence. This situation will enable physically disabled students to receive more effective and permanent, physical and spiritual complementary training from physical education teachers. This will contribute to the socialization of orthopedically disabled students by providing them with better support in their education and learning.
- **Primary School Teachers:** The increase in education expenditures has positive effects on the number of primary school teachers. A good primary education shows that it is critical for children to acquire basic skills and strengthen their academic foundations. The increase in education expenditures supports the employment of primary school teachers and the effective provision of education to more students. It also makes it possible to allocate resources to enable teachers to pursue their continuing professional development and use the latest technology in primary education.
- **Special Education High School Teachers:** The increase in education expenditures may have positive effects on the number of special education high school teachers. Special education high school teachers require students to have special knowledge and skills to meet their customized educational needs. Increasing education expenditures will enable the employment of more special education high school teachers and the provision of training opportunities for these teachers to develop their qualifications and expertise. This will create more benefits by allowing students with special educational needs to learn and access better educational opportunities.

The increase in education expenditures has a positive effect on the number of orthopedically disabled, primary school, secondary school and special education high school teachers. These expenditures support the employment of teachers, improving their education and providing better educational opportunities to students. In this way, the education quality and success of the students increase, the working conditions of the teachers are improved and the education system is made stronger by providing technical and technological support.

➤ The highest effect is in the number of secondary school teachers.

The finding that education expenditures have the highest effect on the number of secondary school teachers is the finding determined after the analysis. Secondary school teachers play an important role in the academic and personal development of students. The positive effects of the increase in education expenditures on the number of secondary school teachers are again gathered under the following headings.

- **Teacher-Green Area Relationship:** In the secondary school period, it is important and prominent for students to discover their individual talents and develop their interests. The increase in education expenditures supports the employment of more secondary school teachers, supporting students to turn to different fields, branches with sportive activities and discover their talents. This enables students to receive more support and guidance in the sportive fields they are interested in. In parallel with the emergence of personal skills of individuals with physical and orthopedic disabilities, the choice of sports fields in the branches in which they can be successful will become more evident.
- **Smaller Class Sizes:** The increase in education spending is reflected in smaller class sizes and a higher teacher-student ratio. In smaller classrooms, teachers can provide students with more individual attention and guidance. It is also among the findings that if the relationship between the student and the teacher is individual, especially in trainings that require physical and sportive activities, and if they work with smaller groups, the rate of benefit provided by success will increase. This situation also allows students to better manage their learning processes and receive support according to their needs.
- **Qualified Teacher Employment:** The increase in education expenditures contributes to the employment of more qualified teachers in schools where special education is given and the situation that requires special education. As qualified teachers have the capacity to provide better education to students, the expected benefit is equally parallel. At the same time, qualified teachers can increase students' motivation towards academic, physical, spiritual and bodily integrity.
- **Professional Development Opportunities:** The increase in education expenditures necessitates allocating more resources to the professional development of teachers who provide training for physical and orthopedic students who require special education. It is very important for these teachers to participate in professional development programs and learn current education methods and pedagogical approaches. This increases the educational skills of teachers and the quality education opportunities they can offer to students.

It is seen that the increase in education expenditures has the highest impact on the number of secondary school teachers. The reason for this is that it parallels the emergence of more self-discovery, awareness, understanding, recognition and self-confidence perception of individuals with physical and orthopedic disabilities as the time period when the development period begins. This increase provides students with better guidance, individual attention and educational opportunities. In addition, by supporting the employment of

qualified teachers and making more investments in their professional development, it will be possible to contribute more to the personal, physical and spiritual development of students with physical and orthopedic disabilities. Thus, a more suitable environment will be created for the academic success and personal development of the students.

Ethical Considerations: Institutional permission was obtained for the study with the information of Firat University, Dean of Sports Sciences Number: E-20158992-020-339849, Date: 20.06.2023. Since the data used in the study is panel data and the data used in the analysis consists of these panel data, it does not constitute a situation that requires an ethics committee approval.

Conflict of Interest: There is no conflict of interest between the authors.

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References

- Akın, Mart, Ö., & Kartal, S. (2021). Türkiye'deki eğitim harcamalarının değerlendirilmesi. *Muğla Sıtkı Koçman Üniversitesi Eğitim Fakültesi Dergisi*, 8(1), 37- 53. DOI: 10.21666/muefd.7449101
- Arabacı, Bakır, İ. (2011). Türkiye'de Ve OECD Ülkelerinde Eğitim Harcamaları. *Elektronik Sosyal Bilimler Dergisi*, 10 (35), 100-112.
- Ayvacı, H. Ş., & Bilge, E. (2018). Ortaöğretim öğrencilerinin günlük yaşam problemlerine alan bilgisi ile bağlam kurabilme becerilerinin değerlendirilmesi. *Amasya Üniversitesi Eğitim Fakültesi Dergisi*, 7(2), 311-342.
- Atik, İ. (2018). Nitelikli işgücü için etkin mesleki eğitim konusuna çözüm olarak fen, teknoloji, mühendislik, matematik FTMM eğitimi. *Yükseköğretim ve Bilim Dergisi*, Sayı: 2, 254- 263.
- Berdishevsky, H. et al., (2016). Physiotherapy scoliosis-specific exercises – a comprehensive review of seven major schools. *Scoliosis and Spinal Disorders*, Vol: 52: 11-20. DOI <https://doi.10.1186/s13013-016-0076-9>
- Booth, F. W. et al., (2012). Lack of exercise is a major cause of chronic diseases. *Compr Physiol*, 2(2), 1143–1211. <https://doi.10.1002/cphy.c110025>
- Buldu, M. (2014). Öğretmen yeterlik düzeyi değerlendirmesi ve mesleki gelişim eğitimleri planlanması üzerine bir öneri. *Milli Eğitim*, 204, 114-134.
- Büyükhahin, Y., & Şahin, A. E. (2017). Öğretmenlerin gözünden eğitimde kalite sorunsalı. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, 6(3), 1134-1152. <https://doi.10.14686/buefad.290859>
- Çakmak, Ö. (2008). Eğitimin ekonomiye ve kalkınmaya etkisi. *D.Ü. Ziya Gökalp Eğitim Fakültesi Dergisi*, 11, 33-41.
- Demirdel, S., & Bayramlar, K. (2014). Amputasyondan sonra normal yaşama yeniden katılım sürecinin yaşam kalitesi ve fonksiyonel düzey ile ilişkisinin incelenmesi.

- Turk J Physiother Rehabil*, 25(3), 93-99. <https://doi.10.7603/s40680-014-0015-8>
- Doruk, M., Mustafaoğlu, R., Yıldız, A., & Öztürk, M. (2019). Tekerlekli sandalye basketbol oyuncularında core kas dayanıklılığı ile aerobik kapasite, hız, çeviklik ve spora özgü beceriler arasındaki ilişkinin incelenmesi. *Spor Bilimleri Dergisi*, 30(3), 96- 106. <https://doi.org/10.17644/sbd.530004>
- Dumlu, U., & Aydın, Ö. (2008). ekonometrik modellerle türkiye için 2006 yılı gini katsayısı tahmini. *Ege Akademik Bakış Dergisi*, 8(1), 373-393.
- Durkaya, M., & Hüsnüoğlu, N. (2018). İstihdamda eğitimin rolü. *Sosyal ve Beşeri Bilimler Araştırmaları Dergisi*, 19(41), 51-70.
- Engelli ve Yaşlı Hizmetleri Genel Müdürlüğü, (2021). Engelli ve yaşlı istatistik bülteni, https://www.aile.gov.tr/media/88684/cyhgm_istatistik_bulteni_temmuz2021.pdf, Erişim tarihi: 09.08.2023.
- Frey, C.Y.P. (2006). Otizm spektrum bozukluğu olan gençlerde fiziksel aktivite kalıpları. *Journal of Autism and Devel opmenta lDisorders*, Cilt: 36, Sayı: 5: 597-606.
- Genç, Y., & Çat, G. (2013). Engellilerin istihdamı ve sosyal içerme ilişkisi. *Akademik İncelemeler Dergisi*, 8(1), 363-393.
- Güncör, C. (2017). Eğitim ve kalkınma ilişkisinin incelenmesi. *Uluslararası Sosyal Bilimler Eğitimi Dergisi*, 3(1), 14-32.
- Holland, K. et al., (2023). Everybody wants to be included: experiences with inclusive strategies in physical education. *Journal of Developmental and Physical Disabilities*, 35(2), 273– 293. <https://doi.10.1007/s10882-022-09852-x>
- Karahan, B. G., & Kuru, E. (2015). Ortopedik, Görme ve İşitme Engelli Öğrenciler için Beden Eğitimi ve Spor Dersi Tutum Ölçeği Geliştirme Çalışması. *CBÜ Beden Eğitimi ve Spor Bilimleri Dergisi*, 10(1), 36-46.
- Karadaş, H. A. (2021). Yüksek eğitim seviyesine sahip işgücü ekonomiye katkı yapar mı? Gelişmiş ülkeler üzerine bir analiz. *Kesit Akademi Dergisi*, 7(28), 433-450. <https://doi.org/10.29228/kesit.51258>
- Karadeniz, O., Durusoy, S., & Köse, S. (2007). Avrupa Birliği yolunda Türkiye'de eğitim ve beşeri sermaye. Ankara: Gazi Kitabevi.
- Karasu, T., & Mutlu, Y. (2014). Öğretmenlerin perspektifinden özel eğitimde yaşanan sorunlar ve çözüm önerileri: muş il örneği. *ANEMON Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, 2(1), 47-66.
- Kazu, İ. Y. (2018). Sosyo-ekonomik açıdan dezavantajlı kişilerin eğitimleri sırasında karşılaştıkları sorunlar. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, 34, 38- 47. <https://doi.org/10.14582/DUZGEF.1912>
- Kır, S. G., & Yavuz, A. (2015). Eğitim öğretimi teşvik etmeye yönelik vergi politikaları: avrupa birliği ve türkiye uygulaması. *Uluslararası Alanya İşletme Fakültesi Dergisi*, 7(2), 109- 121.
- Köksel, B., & Tecirli, S. (2023). Türkiye'de eğitim harcamaları ve ekonomik büyüme ilişkisi üzerine ampirik bir analiz. *Anasay*, 23, 71-104.
- Kurt, G. (2018). Engelli Öğrencilerin Yaşam ve Eğitim Kalitesi Algısı Bolu İl Örneği. *Researcher*, 5(2), 100-121.
- Mart, Ö. A., & Kartal, S. (2021). Türkiye'deki eğitim harcamalarının değerlendirilmesi. *MSKU Eğitim Fakültesi Dergisi*, 8(1), 37-53. <https://doi.10.21666/muefd.7449101>
- Metin, E. (2018). Eğitimde teknoloji kullanımında öğretmen eğitimi: bir durum çalışması. *Journal of Steam Education Bilim, Teknoloji, Mühendislik, Matematik ve Sanat Eğitimi Dergisi*, 1(1), 157-176.
- Mülayim, A., & Pala, A. G. (2020). Tekerlekli sandalye kullanan engellilerin sosyal hayata katılımında en büyük engel; yapıllı çevrede yaşanan problemler ve çözüm önerileri. *Sosyal Politika Çalışmaları Dergisi*, "Erişilebilirlik" Özel Sayısı, Cilt: 2, 357-382. <https://doi.10.21560/spcd.vi.821013>
- Orhan, R. (2019). Çocuk gelişiminde fiziksel aktivite ve sporun önemi. *Kırıkkale Üniversitesi Sosyal Bilimler Dergisi (KÜSBD)*, 9(1), 157-176.
- Raya, M. A. et al., (2010). Impairment variables predicting activity limitation in individuals with lower limb amputation. *Prostheticsand Orthotics International*, 34(1), 73–84. <https://doi.10.3109/03093640903585008>
- Salkım, C. B., Erkan, M., & Gümüşdağ, H. (2023). Investigation of the effect of sports on the socialization of physically disabled individuals. *Spormetre The Journal of Physical Education and Sport Sciences Beden Eğitimi ve Spor Bilimleri Dergisi*, 21(1), 1-12. <https://doi.10.33689/Spormetre.1128586>
- Sinclair, K. M., Hamlin, M. J., & Steel, G. D. (2005). Physical activity levels of firstyear New Zealand university students: pilot study. *Youth Studies Australia*, 24(1), 38-42.
- Taşkın, A. K., Gür, Y., & Şahin, E. (2022). Engelli öğrencilerin beden eğitimi ve spor dersine yönelik tutumlarının incelenmesi. *Spor Eğitim Dergisi*, 6(3), 149-156. <https://doi.org/10.55238/seder.1147315>
- Tekin, H. H. (2019). Engelli üniversite öğrencilerinin eğitim yaşamındaki sorunları: konya örneği. *Manas Sosyal Araştırmalar Dergisi*, 8(2), 1531-1548. <https://doi.org/10.33206/mjss.479132>
- Tezsürücü, D., & Bursalıoğlu, S. A. (2013). Yükseköğretimde değişim: kalite arayışları. *KSÜ Sosyal Bilimler Dergisi*, 10(2), 97-108.
- Tiyek, R., Eryiğit, B. H., & Baş, E. (2016). Engellilerin erişilebilirlik sorunu ve TSE standartları

çerçevesinde bir araştırma. *Kastamonu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 12, 225-261.

TUIK, <https://data.tuik.gov.tr/Bulten/Index?p=Egitim-Harcamaları-Istatistikleri-2021-45553>, Erişim tarihi: 09.08.2023, yayım tarihi: 07 Aralık 2022, sayı: 45553.

Ulusoy, A., Karakurt, B., & Akbulut, E. (2015). Eğitim harcamalarının gelir dağılımına etkisi: Türkiye’de yükseköğretim gelir eşitsizliğini giderici işlevi. *Maliye Araştırmaları Dergisi*, 1(2), 45-75.

Yılmaz, B. (2005). Bedensel engelli çocukların temel eğitim okullarında eğitim alabilmesi için gereken mimari düzenlemeler. *S.Ü. Mühendislik Mimarlık Fakültesi Dergisi*, 20(3), 73- 84.

Yılmaz, V., & Yentürk, N. (2017). Türkiye’de Engellilere Yönelik Kamu Harcamalarının On Yıllık Seyri, *Çalışma ve Toplum*, 59-74.

GENİŞLETİLMİŞ ÖZET

Çalışmanın Amacı: Bu araştırmanın amacı, eğitim harcamalarının, farklı eğitim seviyelerindeki ortopedik engelli öğrenci ve öğretmen sayısı üzerindeki etkisini belirlemektir.

Araştırmanın Problemi: Bu araştırma eğitim harcamalarının, ortopedik engelli öğrenci ve öğretmen sayıları üzerinde etkisi olduğunu ileri sürmektedir. Buna ilişkin hipotezler aşağıdaki şekilde oluşturulmuştur.

Çalışmanın Kapsamı: Araştırmada 2012-2017 yılları arasındaki, MEB eğitim yatırımları verileri ile yine aynı dönemdeki öğrenci ve öğretmen sayısı verileri kullanılmıştır. Araştırmada özel eğitim gerektiren fiziksel ve ortopedik yönden engelli ilkökul, ortaokul ve lise seviyesindeki öğrencilere yönelik eğitim programları ile eğitim yatırımları bu araştırmanın kapsamı içerisinde yer almaktadır.

Literatür Araştırması: Günümüzde ortopedik engelli öğrencilerin fiziksel eğitiminin teknolojik gelişmelere rağmen halen eksik ve yetersiz olduğunu bilmekteyiz. Bu öğrencilerin bedensel ve motor becerilerini geliştirmeyi, hareket kabiliyetlerini artırmayı ve fiziksel aktivitelere katılımlarını teşvik edecek yöndeki program ile aktivitelerin birçok nedene bağlı olarak eksik ve yetersizliği de bilinmektedir (Karahana & Kuru, 2015). Bu öğrencilerin yaşamlarının her alanında karşılaştıkları zorlukları aşmalarına yönelik yardımcı olmaya ilişkin uygulamalarda yetersiz ve yok denecek seviyededir. Sağlık, sosyal uyum ve özgüven gibi birçok açıdan da önemli faydalar sağlayan bu etkinliklerin yetersizliklerinin ortaya çıkmasındaki en önemli sorunların başında mali imkansızlıklar ile yatırımların yokluğudur (Taşkın ve diğ., 2022).

Ortopedik engellilik, kas-iskelet sistemi, eklem veya uzuvlarla ilgili bir sorun sonucunda hareket kısıtlılığına veya fiziksel engelliliğe yol açan bir durumu ifade eder (Raya et al., 2010). Bu durumlar arasında omurilik yaralanmaları, doğuştan gelen ekstremité kusurları, amputasyonlar, kas distrofileri ve kemik hastalıkları gibi çeşitli nedenler de yer alır. Ortopedik engelli öğrenciler, bu durumlar nedeniyle

fiziksel aktivitelere katılmakta zorluklar yaşarlar ve bedensel becerilerini geliştirmek için özel bir eğitim ihtiyaçları vardır (Demirdel & Bayramlar, 2014).

Ortopedik engelli öğrencilerin fiziksel eğitimi, onların yaşam kalitesini artırmada ve bağımsızlıklarını desteklemede büyük öneme sahiptir (Kurt, 2017). Bu eğitim, öğrencilerin hareket kabiliyetlerini artırmaya yönelik egzersizler, kas güçlendirme çalışmaları, esneme hareketleri ve denge egzersizleri gibi aktiviteleri içerir (Karahana & Kuru, 2015). Bu sayede öğrenciler, günlük yaşamlarında daha bağımsız olabilirler ve fiziksel engelleri aşarak günlük aktivitelerini yerine getirebilirler (Ayvacı & Bilge, 2018).

Eğitim ve ekonomi arasında güçlü bir ilişki bulunmaktadır (Çakmak, 2008). Eğitim, bir ülkenin ekonomik büyümesi, inovasyon yeteneği, işgücü verimliliği ve toplumsal refahı üzerinde önemli bir etkiye sahiptir (Köksel & Tecirli, 2023).

Yöntem: Elde edilen veriler, Eviews ve SPSS 18 paket programları ile analiz edilmiştir. Analiz kapsamında frekans tabloları, regresyon testi ve faktör analizi kullanılmıştır.

Sonuç ve Değerlendirme: Araştırma sonunda elde edilen literatür bulgu ile sonuçları çerçevesinde yapılan analiz ile kendi bulgularımız değerlendirilmiştir. Aşağıda dört farklı faktör altında bulgular değerlendirilmiştir. Eğitim harcamalarının ortopedik engelli, ilkökul, ortaokul ve özel eğitim lisesi öğrencilerinin sayıları üzerinde pozitif etkisi olduğunu belirtmek mümkündür. Eğitim harcamalarının artması, bu öğrenci gruplarına yönelik eğitim hizmetlerinin iyileştirilmesini ve genişletilmesini sağlayabilmektedir.

Eğitim harcamalarındaki artışın en yüksek etkiyi ortaokul öğretmenlerinin sayısı üzerinde gerçekleştirdiği görülmektedir. Bunun nedeni olarak fiziksel ve ortopedik engelli bireylerin daha fazla kendini keşfetme, bilinçlenme, anlama, tanıma ve özgüven algısının gelişme döneminin başladığı zaman dilimi olarak ortaya çıkması ile paralellik göstermesidir. Bu artış, öğrencilere daha iyi rehberlik, bireysel dikkat ve eğitim imkanları sağlamaktadır. Ayrıca, nitelikli öğretmenlerin istihdam edilmesini ve mesleki gelişimlerine daha fazla yatırım yapılmasını desteklenerek, fiziksel ve ortopedik engelli öğrencilerin kişisel, fiziksel ve ruhsal yönden gelişimlerine daha fazla katkı yaratılabilecektir. Böylelikle, öğrencilerin akademik başarıları ve kişisel gelişimleri için daha uygun bir ortam oluşturulabilecektir.