PAMUKKALE JOURNAL OF SPORT SCIENCES
ISSN: 1309-0356
dergipark.org.tr/en/pub/psbd

Pamukkale J Sport Sci, 12(1), 29-40, 2021

Research Article

The Effect of Movement Education Studies Applied to Children with Specific Learning Disability on Psychomotor Development

Betül BAYAZIT[1], Fatih TEZEL[2], Gökhan ÇAKMAK[1*]

[1]Kocaeli University, Faculty of Sports Sciences, Kocaeli, Turkey
[2]Kocaeli University, Health Sciences Institute, Kocaeli, Turkey

Keywords
Specific learning disability, Physical activity, Psychomotor development, Movement training, Mental disability

Article History
Received 11 June 2020
Revised 03 March 2021
Accepted 20 April 2021
Available online 23 April 2021

***Corresponding Author**:
Gökhan Çakmak
E-mail Address:
cakmakgokhan23@gmail.com

ABSTRACT

Specific learning disability is a condition that causes academic and mental processes, problems in motor development, balance, and coordination. This study was conducted to determine if some psychomotor skills of children with a specific learning disability develop with movement education. The working group consists of a total of twenty-eight children aged 7-14 with specific learning disabilities, who are trained in a private rehabilitation center operating and selected through simple random sampling in Kocaeli. In this research, fourteen experimental groups and fourteen as control groups were determined of the total of twenty-eight students. The data were obtained through observational tests applied before and after the 8-week training program. Experts prepared the observation results in the form of a 5-point Likert and marked the form. SPSS 25.0 was used to analyze the data. The Wilcoxon test was used because the data didn't show a normal distribution, and the research included correlation measurements. As a result of the study, no statistically significant difference was found between the test values of the control group before and after the training ($p>.05$), but there was a significant difference between the test values before and after the training in the experimental group ($p<.05$). It is concluded that movement training studies have positive effects on some psychomotor skills.

Citation: Bayazıt, B., Tezel F. and Çakmak G. (2021). The effect of movement education studies applied to children with specific learning disability on psychomotor development. *Pamukkale Journal of Sport Sciences*, 12(1), 29-40.

INTRODUCTION

When the definitions related to specific learning disability are investigated, it can be seen that different sources make different definitions in the literature. For example, the American Psychiatric Association (APA), specific learning disability the Diagnostic and Statistical Manual of Mental Disorders (DSM) in the "a neurodevelopmental disorder with a biological origin with the underlying abnormalities in cognitive level (APA, 2013)" as defining, Turkey Ministry of National Education The Specific Education Services Regulation states that "specific education and support education service, due to the difficulty of listening, speaking, reading, writing, spelling, concentration, or performing mathematical operations that occur in one or more of the information retrieval processes necessary to use the language in written or verbal understanding individuals in need (MEB, 2006)" defines the form.

As a result of psychological and neurological factors, which are not clear, a specific learning disability is a situation in which the normal development of the child is significantly impaired in academic programs, language, mental processes, and motor development levels (Özmen, 2010).

According to another definition, the child's reading, writing, arithmetic or listening, speaking is the difficulty in gaining experience in using and reasoning ability (Singh et al., 2017). Although the studies in this field started in the 1800s, the term learning disorder was first used by Kirk in 1963 (Courtad & Bakken, 2011).

Considering the general behavioral characteristics of children with a specific learning disability; speech delay can be seen, failure to tie shoes, right-left confusion, confusion of time and direction concepts, distraction and early forgetting are observed, reading is learned late and difficult, adaptation problem is seen, d and b, p and b letters are mixed, lack of self-confidence, excessive irregularity is observed, the order of the letters is mixed, there is a slowness in visual and auditory perception, there is difficulty in organizing, synthesizing and analyzing, difficulty in mathematics (Salman et al., 2016). In addition to academic and mental processes, problems in motor development, balance, and coordination can be observed in specific learning disability (Miciak & Fletcher, 2020). These skills are essential for success at school and work and for coping with life in general (Pullen et al., 2017).

Numerous studies have pointed to the importance of early diagnosis and intervention. The results of the research have shown that children in the risk group can be identified in the pre-school period (Litt et al., 2005) and that appropriate motor programs can increase educational achievement (Deng, 2017). These programs include large motor, fine motor,

attention, and social skills to increase the general developmental levels of children (Doğan, 2012).

Learning disability is a situation that causes various difficulties in acquiring knowledge, skills, and behavior during the lifelong education process (Chordia, Thandapani & Arunagirinathan, 2020). Although the intellectual (mental) capacities of children with learning difficulties are normal or close to normal, they cannot show the success expected from them (Deniz et al., 2009). In addition to skills such as reading and writing in specific learning disability, there are various problems related to fine motor skills, balance, and motor coordination (Cavioni, Grazzani & Ornaghi, 2017). Individuals with specific learning disability experience motor skills that are predicted to be automated as they are repeated (Demirci & Toptaş Demirci, 2016). These motor skills are preferred for fine motor skills, hand holding, pen holding, cube, and lego-like games, etc. rhythmic movement, bouncy play, throwing, and catching balls, jumping rope, etc. it can be expressed as.

Movement in childhood is an essential element for a child's growth (Carmen, 2020). Although it is known that physical activity makes learning an active process, it also improves the skills of the child playing games (Arabacı & Çıtak, 2017). Sports meets the movement needs of individuals, has certain rules, entertains, socializes; it can be defined as competitive physical activities in itself (Heper et al. 2012). Children interact while doing sports and learn certain rules. Children become conscious of doing and undertaking a job (Yıldız & Çetin, 2018). A well-designed motor program can help children to grow skills related to daily life, improve the mental status and increase self-esteem (Larouche et al., 2013). With physical activities to be performed in children in need of specific education, social competence, development in motor skills, physical and motor fitness, free time skills, stress relief, and game skills can be improved (Koparan, 2003).

Since the practices in public schools for children diagnosed with a specific learning disability may be insufficient, private education and rehabilitation centers are used, or private schools with low-class sizes are preferred (Aksoy, 2019). In this context, our study was carried out in order to determine whether some of the psychomotor skills of children with specific learning disability and support education in private schools other than public schools develop with movement training studies. In Görgün & Melekoğlu's (2019) study, the specific learning disabilities field is limited scientific knowledge and innovation in Turkey, the nature of the work to be done in this area, and the quantity as is stated to increase. In addition, it is aimed to contribute to the literature with this study.

METHODS

This research is research designed and implemented as a trial model. According to Karasar (2015), the experimental model is the research model in which the data to be observed are produced under the control of the researcher in order to try to determine the cause-effect relationships, and it definitely contains a comparison. In this study, the pre-test, post-test control group model, which is a trial model, was used. The reason why this model is preferred in our research is that it allows determining more clearly whether the training program to be applied will have a positive effect on the experimental group.

Participants

The working group consisted of 28 children selected by simple random sampling from 158 children studying in a private rehabilitation center in Kocaeli province and were diagnosed with specific learning difficulties. Seven of the children in the study group are girls, and seven are boys, and their ages range from 7-14. The children in the study group continued their education regularly. The characteristics of the working group can be seen in Table 1.

In the simple random sampling method, each item that is likely to be included in the study is given an equal chance to be selected for sampling, and in order to apply this sampling technique, the sampling frame list must be in the hands of the researcher (Gürbüz & Şahin, 2018). In this sampling type, each element should have the chance of being selected equally, and at the same time, the selection of one should not affect the selection of the other (Coşkun et al., 2017). In this study, the sample frame list was composed of 158 children who were educated in the institution where the study was conducted. A number was given to each of the children, and it was determined who would be included in the working group by pulling numbers from a closed bag with the name picking method.

Data Collection Instruments

The Movement Training Skill Test prepared by Tekin (1987) in the form of a 5-point Likert was used for the motor development behaviors to be measured as a data collection method. Movement Training Skill Test is a test that is applied as a pre-test and a post-test. The test consists of nine motor behaviors, including static balance, dynamic balance, ball handling with a racket, throwing a ball to the target, cross bounce, dribbling, changing the ball, crossing an obstacle, and passing between slalom. Related trails used for measuring motor behavior were created by respecting the eligibility age range of the sample group by the researchers. Movement training skills of all individuals can be tested with this test. Cronbach's Alpha value

of the measurement tool was determined as .937 in our study. This value indicates that the measuring tool has high reliability (Alpar, 2010).

In our study, no personal information form was used; only the ages of the participants were noted. Information on the specific learning disability levels of the participants was obtained from the reports given by the Guidance Research Centers.

Table 1. Percentage Frequency Values of the Participants

Experimental / Control	Gender	Age	f	%
Experimental Group	Female	7	1	14.3
		9	1	14.3
		10	2	28.6
		11	1	14.3
		14	2	28.6
		Total:	**7**	**100**
	Male	8	1	14.3
		9	1	14.3
		10	1	14.3
		11	2	28.6
		12	1	14.3
		13	1	14.3
		Total:	**7**	**100**
Control Group	Female	8	1	14.3
		9	1	14.3
		10	2	28.6
		11	2	28.6
		13	1	14.3
		Total:	**7**	**100**
	Male	7	1	14.3
		9	1	14.3
		10	1	14.3
		12	2	28.6
		13	1	14.3
		14	1	14.3
		Total:	**7**	**100**

Data Collection Procedure

This study was conducted in accordance with the Helsinki Declaration (2013) standards following ethical principles. The necessary permissions were obtained from the private rehabilitation center in Kocaeli, which is the institution where the study was conducted, regarding the conduct of the study. In the study, detailed information about the general and specific characteristics, content, purpose, method, location, time, and duration of the study was given to the children with a specific learning disability and their families who are included in both the experimental and control groups. An information form about working was distributed to the families of all children, and written consent was obtained from the families regarding their child's participation in the study. Families and children were informed that participation in the study is voluntary and that they can leave at any stage of the study if they wish. However, at the time of the application, the parents of the students in the working group were not taken into the test environment, considering that they could have a negative impact on the students' attention.

The data were obtained through observational tests applied before and after the 8-week training program applied to children studying in the relevant institution. During the observations made, whether the students perform the specified movement or not is marked by the experts, and the 5-point Likert form, which ranges from "Can't Ever Do It - Makes It Very Good."

All children were given mobility skills once and for testing purposes. With the method of drawing names from the working group, a total of fourteen children, seven girls, and seven boys, were selected as the control group, and fourteen children, seven girls and seven boys, were selected as the experimental group. Then the working group was rested and pre-tested. A movement training program was applied to the children in the experimental group for eight weeks. After eight weeks of training, the study group was re-tested.

A sports trainer, a specific education teacher, a psychologist, and a physiotherapist were kept as observers during the implementation of the training program and the children's movements. It was paid attention that the temperature of the environment in which the test was performed was between 20-22 degrees.

Movement Education Program

Within the training program that lasts three days a week, 60 minutes a day, and a total of 8 weeks; Studies selected from the locomotor, manipulative, and balancing movements,

which include children's static balance, dynamic balance, racket-to-ball, throw-to-target, cross-jump, dribbling, ball-changing, obstacle-passing, and slalom-passing skills is located. Training programs were implemented by gamification. At the end of the training program, the training program applied to the experimental group was applied to the participants in the control group of the study, thereby preventing the disadvantaged situation of the control group.

Data Analysis

SPSS 25.0 package program was used in the analysis of the data. Shapiro-Wilk test was used in case the group size is less than 50, and Kolmogorov-Smirnov (K-S) test was used to examine the compliance of the data to the normality (Büyüköztürk, 2018). In order to determine whether the data shows the normal distribution in line with this information, the Shapiro-Wilk test was applied since the group size was less than 50, and it was determined that the data did not show normal distribution ($p < 0.05$). Since the data did not show a normal distribution and the research included correlation measurements, the Wilcoxon signed-ranks test was used for the related measurements from nonparametric tests. In addition, average and standard deviation values were used in the interpretation of the data.

RESULTS

The findings obtained as a result of the study were given in this section.

When table 2 is examined, it can be seen that the post-test average scores are higher than the average pre-test scores in all motor behaviors, especially in the dynamic behavior of the experimental group, especially ball behavior, ball change, and slalom making motor behaviors. On the other hand, there is not a big change in the motor behavior of the control group between the average pre-test scores and the post-test average scores.

Also, in table 2, it can be seen that the Wilcoxon test is used to determine whether there is a statistically significant difference between the motor behavior scores of the experimental group and the control group. As a result of the applied test, there was not a statistically significant difference in the static balance of the nine motor behaviors, which were the test parameters in the experimental group ($p > 0.05$). A statistically significant difference was found in all of the other motor behaviors such as dynamic balance, carrying ball with racket, ball throwing, cross bounce, dribbling, ball changing, obstacle passing, and slalom making ($p < 0.05$). There is no statistical difference in all of the motor behaviors measured in the control group. In addition, average and standard deviation values were used in the interpretation of the data.

Table 2. Means and Standard Deviations of the Experimental and Control Groups According to Motor Behaviors and Wilcoxon Test Results

		Pre-Test		Post-Test		Wilcoxon	
	Motor behavior	**Mean**	**Sd**	**Mean**	**Sd**	**Z**	**p**
Experimental Group	Static balance	4.79	.57	4.93	.26	-1.414[a]	.157
	Dynamic balance	3.21	1.31	4.79	.42	-2.739 [a]	.006*
	Carrying ball with racket	2.57	1.22	4.50	1.09	-3.109 [a]	.002*
	Throw the ball to the goal	3.50	.76	4.14	.86	-2.460 [a]	.014*
	Cross bounce	3.79	1.12	4.57	.64	-2.414 [a]	.016*
	Dribbling	3.43	1.15	4.50	.96	-2.762 [a]	.006*
	Changing the ball	2.93	1.43	4.29	1.06	-2.701 [a]	.007*
	Crossing obstacle	4.21	.80	4.79	.57	-2.271 [a]	.023*
	Making slalom	3.50	.85	5.79	.57	-2.972 [a]	.003*
Control Group	Static balance	4.21	.97	4.57	.93	-1.518[a]	.129
	Dynamic balance	4.36	1.08	4.21	1.05	-1.000[b]	.317
	Carrying ball with racket	2.93	1.20	3.36	1.44	-1.561[a]	.119
	Throw the ball to the goal	3.43	.93	3.43	1.01	.000[c]	1.00
	Cross bounce	3.29	1.204	3.50	1.345	-1.000[a]	.317
	Dribbling	3.36	1.550	3.36	1.393	.000[c]	1.00
	Crossing obstacle	3.07	1.492	3.14	1.406	-.276[a]	.783
	Crossing obstacle	4.00	.784	4.07	.730	-.577[a]	.564
	Making slalom	3.71	1.267	3.43	.938	-1.265[b]	.206

[a] Based on negative ranks
[b] Based on positive ranks
[c] The sum of negative ranks equals the sum of positive ranks
*p<.05

DISCUSSION

It can be said that a specific learning disability is a mild mental disability. In addition to attending classes with their peers, children with a specific learning disability can receive support education from other institutions. This study was carried out to determine whether some of the psychomotor skills of children with a specific learning disability and those who receive supportive education outside of school in this direction develop with movement training studies.

As a result of the study, no statistically significant difference was found between the pre-training and post-training values of the control group (p> 0.05), but a statistically significant difference was found between the pre-training and post-training values in the experimental group (p <0.05). The reason for this is that the movement training application program implemented for eight weeks is suitable for the age and education level of the

children, and at the same time, due to the fact that the applications are in-game content, the children can enjoy the program and be able to participate in the activities regularly. Gamification of the activities included in the movement training program implemented has a positive effect on children's motivation to participate. As stated by Yavuzer (2005), the child has the opportunity to discharge his accumulated energy through play.

Movement training work after the children have specific learning disability with the test parameters compared to pre-education movement has been seen more successfully they fulfill. The reason for this may be due to the improvement in movement skills by providing the need to move, which is inherented in human nature and has an important place, especially for children. Similarly, in a study conducted by Demirci & Toptaş Demirci (2016), they concluded that children were late in learning some motoric behaviors before the teaching process, but during the teaching process, they developed these motor behaviors, and their movements were more comfortable. Krebs (2005), it was concluded that giving the sportive skills in the game form in the applications performed in the mentally handicapped increased both motor behaviors and life and communication skills.

As a result of an 8-week motor skills-focused study conducted with children with a specific learning disability, it was found that physical activities had positive effects on children's learning problems (Deng, 2017). Keskin et al. (2017), as a result of the study, which the effects of exercise practices on sportive performance were investigated in autistic children, reached the conclusion that exercise applications contributed positively to the development of gross and fine motor skills of all autistic children who participated in the study. Alp & Çamlıyer (2016) concluded that in their study with autistic children, movement education and physical activities applied to autistic children support their social development. Although the sample groups of these studies are different from our study, it is possible to say that exercise has positive effects on rough and fine motor skills in almost all individuals in general. In the study, the exercise course and fine motor skills contribute positively to the conclusion that has been reached.

Since motor and balance problems are not noticed in children with special learning difficulties, physical problems are in the last place for parents. (Selçuk et al., 2018). However, physical problems can directly affect the child's success in other fields. Movement training to be implemented in children with a specific learning disability are likely to develop both physical problems and problems in children. In a study conducted with intellectual disability children, it was observed that a 16-week psychomotor training program had positive effects on children's attention and behavior control and school activities (Fotiadou et al., 2017). Many

studies have shown that physical exercises contribute to the development of social behavior and mental skills as well as physical capacity (Badau, 2017; Sönmez, 2017; Yılmaz & Soyer, 2018).

As a result, it can be said that the movement training activities to be applied to children with specific learning disability affect their psychomotor development positively if care is taken regularly and systematically, taking into account the age, level of development, and individual characteristics of the children. This information is in line with the Ministry of National Education with the organizers of education in Turkey (MEB) to enact a program that includes specific learning disability in children with movement education studies will be very useful in terms of the development of these children psychomotor in schools. The implementation of such a program will not only provide positive advances in the psychomotor skills of the individuals concerned but will also ensure that these individuals are healthy and happy.

We think that investigating the changes in the problematic behaviors or academic situations of children with a specific learning disability who underwent movement training or sportive training in later researches will contribute significantly to the relevant literature.

Acknowledgements

This study was presented at the 17th International Sports Sciences Congress in 2019.

Authors' contributions

The first author conceived the idea, wrote the first draft, worked on all drafts. The second author handled develop the main idea, collected data and worked on all drafts. The third author handled the statistics, article writing and directed publishing process. All authors have read and approved the final version of the manuscript and agree with the order of presentation of the authors.

Declaration of conflict interest

The article does not find any personal or financial conflict of interest of the authors.

REFERENCES

Alpar, R. (2010). Uygulamalı İstatistik ve Geçerlik-Güvenirlik. 1.Baskı. Ankara: Detay Yayıncılık.

Alp, H., & Çamlıyer, H. (2016). Otistik Çocuklarda Görülen Davranış Problemlerinin Düzeltilmesiyle Hareket Eğitimi ve Fiziksel Aktivitelerin İlişkisi. Eğitim ve Öğretim Araştırmaları Dergisi, 5 (2), 252-264.

Aksoy, Ş. G. (2019). Yaşam Boyu Özgül Öğrenme Güçlüğü. *İstanbul Kanuni Sultan Süleyman Tıp Dergisi*. 11 (ek sayı). 34-39. https://dx.doi.org/10.5222/iksstd.2019.88609.

Amerikan Psychiatric Association (APA). (2013). Diagnostic and Statistical Manual of Mental Disorders: DSM-5. *Washington: American Psychiatric Association*.

Arabacı N., & Çıtak, Ş. (2017). Okul Öncesi Dönemdeki Çocukların "Oyun" ve "Açık Alan (Bahçe)" Etkinlikleri ile İlgili Görüşlerinin İncelenmesi ve Örnek Bir Bahçe Düzenleme Çalışması. *Mediterranean Journal of Education Research*, 11 (21), 28-43.

Badau, D. (2017). The Educational Impact of Implementation the Education Through Adventure Discipline in Physical Education and Sports Academic Curriculum. *Physical Education of Students*, 21, 108-115. https://doi.org/10.15561/20755279.2017.0302.

Büyüköztürk, Ş. (2018). *Sosyal Bilimler İçin Veri Analizi El Kitabı İstatistik*, Araştırma Deseni, SPSS Uygulamaları ve Yorum. Ankara: Pegem Akademi.

Carmen, P. (2020). Psychomotor Development and Sports Practice in Primary School: Application of APCM Test for Preventive Purposes. *Physical Education and Sports Magazine*, 20, 2143-2150. https://doi.org/10.7752/jpes.2020.s3288.

Cavioni, V., Grazzani, I., & Ornaghi, V. (2017). Social and Emotional Learning for Children with Learning Disability: Implications for Inclusion. *International Journal of Emotional Education*, 9 (2), 100-109.

Chordia, S. L., Thandapani, K., & Arunagirinathan, A. (2020). Children at Risk of Developing Specific Learning Disability in Primary Schools. *The Indian Journal of Pediatrics*, 87, 94-98. https://doi.org/10.1007/s12098-019-03130-z.

Coşkun, R., Altunışık, R., & Yıldırım, E. (2017). *Sosyal Bilimlerde Araştırma Yöntemleri*. Sakarya: Sakarya Yayıncılık.

Courtad, C. A., & Bakken, J. P. (2011). History of Learning Disabilities. *History of Special Education*, 21, 61-87. https://doi.org/10.1108/S0270-4013(2011)0000021007.

Deng, B. (2017). Spark Motor Program to Develop Psychomotor Skills in Learning Disorder Chinese Students. *NeuroQuantology*, 15 (3), 185-192. https://doi.org/10.14704/nq.2017.15.3.1098.

Deniz, M. E., Yorgancı, Z., & Özyeşil, Z. (2009). Öğrenme Güçlüğü Görülen Çocukların Sürekli Kaygı ve Depresyon Düzeylerinin İncelenmesi Üzerine Bir Araştırma. *İlköğretim Online*, 8 (3), 694-708.

Demirci, N., & Toptaş Demirci, P. (2016). Özel Öğrenme Güçlüğü Olan Çocukların Kaba ve İnce Motor Becerilerinin Değerlendirilmesi. *İnönü Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, 3 (1), 47-57.

Doğan, H. (2012). Özel Öğrenme Güçlüğü Riski Taşıyan 5-6 Yaş Çocukları İçin Uygulanan Erken Müdahale Eğitim Programının Etkisinin İncelenmesi. Yayınlanmamış Doktora Tezi. Marmara Üniversitesi Eğitim Bilimleri Enstitüsü.

Fotiadou, E. G., Neofotistou, K. H., Giagazoglou, P. F., & Tsimaras, V. K. (2017). The Effect of A Psychomotor Education Program on the Static Balance of Children with Intellectual Disability. The *Journal of Strength and Conditioning Research*, 31(6), 1702-1708. https://doi.org/10.1519/JSC.0000000000001612.

Gürbüz, S., & Şahin, F. (2018). Sosyal Bilimlerde Araştırma Yöntemleri. Ankara: Seçkin Yayıncılık.

Görgün, B., & Melekoğlu, M. A. (2019). Türkiye'de Özel Öğrenme Güçlüğü Alanında Yapılan Çalışmaların İncelenmesi. *Sakarya University Journal of Education*, 9(1), 83-106. https://doi.org/10.19126/suje.456198.

Heper, E., Koca, C., Ertan, H., Kale, M., Terek, S., Karabudak, E., & Ertan, H. (2012). Spor Bilimleri ile İlgili Kavramlar ve Sporun Tarihsel Gelişimi. H. Ertan (Ed.), *Spor Bilimlerine Giriş* (pp. 11-22). Eskişehir: Anadolu Üniversitesi Yayınları.

Karasar, N. (2015). *Bilimsel Araştırma Yöntemi*. Ankara: Nobel Akademik Yayıncılık.

Keskin, B., Hanbay, E., & Kalyoncu, M. (2017). 5-8 Yaş Grubu Otistik Çocuklarda Egzersiz Uygulamalarının Sportif Performans Üzerine Etkileri. *İstanbul Üniversitesi Spor Bilimleri Dergisi*, 7(2), 50-58.

Koparan, Ş. (2003). Özel İhtiyaçları Olan Çocuklarda Spor. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi.* 17(1). 153-160.

Krebs, P. (2005). Adapted Physical Education and Sport. Winnick, J. (Ed.), *Intellectual Disabilities Human Kinetics*. 4th Edition. New York: State University.

Larouche, R., Boyer, C., Tremblay, M.S., & Longmuir, P. (2013). Physical Fitness, Motor Skill, and Physical Activity Relationships in Grade 4 To 6 Children. *Applied Physiology, Nutrition, and Metabolism*, 39 (5), 553-559. https://doi.org/10.1139/apnm-2013-0371.

Litt, J., Taylor, H.G., Klein, N., & Hack, M. (2005). Learning Disabilities in Children with Very Low Birthweight: Prevalence, Neuropsychological Correlates, and Educational Interventions. *Journal of Learning Disabilities*, 38 (2):130-41. https://doi.org/10.1177/00222194050380020301.

Miciak, J., & Fletcher, J. M. (2020). The Critical Role of Instructional Response for Identifying Dyslexia and Other Learning Disabilities. *Journal of Learning Disabilities*, 53 (5), 343-353. https://doi.org/10.1177/0022219420906801.

Milli Eğitim Bakanlığı (MEB). (2006). Özel Eğitim Hizmetleri Yönetmeliği. 31.05.2006 tarih ve 26184 sayılı Resmî Gazete.

Özmen, R. G. (2010). Özel Eğitime İhtiyacı Olan Öğrenciler ve Özel Eğitim, Öğrenme Güçlüğü Olan Öğrenciler. Ankara: Pegem Yayınevi.

Pullen, P. C., Lane, H. B., Ashworth, K. E., & Lovelace, S. P. (2017). *Specific Learning Disabilities.* Handbook of Special Education. Second Edition. New York: Taylor & Francis.

Salman, U., Özdemir, S., Salman, A. B., & Özdemir, F. (2016). Özel Öğrenme Güçlüğü 'Disleksi'. *FNG& Bilim Tıp Dergisi*, 2 (2), 170-176. https://doi.org/10.5606/fng.btd.2016.031.

Selçuk, R., Tarakçı, D., Taşkıran, H., & Algun, Z. C. (2018). Özel Öğrenme Güçlüğü Olan Çocuklarda Çift Görev Odaklı Denge Egzersizlerinin Denge ve Öğrenme Üzerine Etkisi. *Journal of Exercise Therapy and Rehabilitation*, 5 (2), 65-73.

Singh, S., Sawani, V., Deokate, M., Panchal, S., Subramanyam, A. A., Shah, H. R., & Kamath, R. M. (2017). Specific Learning Disability: A 5 Year Study From India. *International Journal of Contemporary Pediatrics*, 4 (3), 863-868. https://dx.doi.org/10.18203/2349-3291.ijcp20171687.

Sönmez, V. (2017). Association of Cognitive, Affective, Psychomotor and Intuitive Domains in Education, Sönmez Model. *Universal Journal of Educational Research,* 5 (3), 347-356. doi:10.13189/ujer.2017.050307. https://doi.org/10.13189/ujer.2017.050307.

Tekin, H. (1987). Eğitimde Ölçme ve Değerlendirme. Ankara: Meso Yayınevi.

Yavuzer, H. (2005). Çocuğu Tanımak ve Anlamak. İstanbul: Remzi Kitabevi.

Yıldız, E., & Çetin, Z. (2018). Sporun Psikomotor Gelişim ve Sosyal Gelişime Etkisi. *Hacettepe Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*, 5(2), 54-66. https://doi.org/10.21020/husbfd.427140.

Yılmaz, A., & Soyer, F. (2018). Effect of Physical Education and Play Applications on School Social Behaviors of Mild-Level Intellectually Disabled Children. *Education Sciences*, 8(89). https://doi.org/10.3390/educsci8020089.