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## The Influence of Physical Activity Level on the Children's Learning Ability of Disabled Children Having Difficulties in Learning

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### Abstract

In this study; it was aimed to study on the effect of physical activity on the children's learning ability beside making the students gain regular physical activity habit especially from the childhood age for the disabled students having learning difficulties. The working group include forty students having learning difficulty. The physical activity levels were defined by International Physical Activity Questionnaire (UFAA) and the cases (phenomenons) were classified like these; physically nonactive ones, having lower physical activity levels and enough physical activity levels. "Learning Disability Recognition Questionnaire" teachers form was used. Nearly %17 of the students were not found physically active, %71 of the students had lower level of physical activity level and only %12 of the students had enough physical activity level. Meaningful difference was found including ( $p < 0.01$ ) between physical activity level and learning abilities. It was found out that when the physical activity levels increased the learning success increased too. It was observed that there was a similarity between the children's physical activity and learning abilities. For that reason, the necessary supportive education to increase the physical activity becomes more important for the children having learning difficulty.

**Key Words:** Physical activity, Learning Disabilities, children with disabilities

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## 1. Introduction

The learning disabilities are generally used for children having learning disabilities with normal mental abilities (Sulaiman et al, 2011). The difference between the students' abilities (such as mental) with their success (according to age and class level) have been used such as criteria. For example, the success level of same lessons of a third class student may be the same as the first class student's success level according to the age and mental level (Karlıdağ and Suna, 2003).

School unsuccess of the students having learning disabilities; may be come up with learning academic abilities such as listening, speaking, reading, writing and mathematics. School unsuccess, although a student who is provided necessary learning experiences which are suitable/convenient for the student's age and ability level that shows meaningful unsuccessfulness according to the students' having average school success. But it is not possible to define the dividing line between school success and learning disability. It is possible to see some students being unsuccessful without having learning disabilities (Kircaali- İftar, 1992). According to Korkmazlar the reasons of school unsuccessfulness and learning disability derive from mental retardation, seeing, hearing problems, serious psychological problems, social and cultural disabilities, neurotic – orthopedically handicaps, familiar conflicts, lack of motivation, the problems derived from school – teacher or the curriculum (Korkmazlar, 1992).

The physical activity with all these reasons is one of the important activities influencing the problems facing the students in many dimensions. Niemann (2000) defined that the physical activities have positive influences and he shortly explained the uses of it on the child and teens like this: While it shortens stress, anxiety and depression, produces positive influence on autistic teens having learning disability and strengthens the academic performance. For that reason, it may be said that it is effective on having the children gain regular physical activity habit, making the physical activities being such as a part of daily life, keeping and developing the health of the persons (Rovio et al, 2005). On the other hand, according to the results of some researches, it was found out that the physical activities may have some positive influence (Kramer et al, 2006).

It is pointed out that the physical activity has two positive influences on developing the children's learning functions. While the first one is an important argument to increase the academic success, the second one is a kind of instrument to decrease the irritable behaviours derived from the education program (Trudeau and Shephard, 2008). On the other hand attending the physical activity helps the students develop their learning ability and physical activity (Taras, 2005). At the same time, when the relation between the academic integration and academic successes of the children needed special education it is defined that the exercise and physical activity show positive results for the children having

learning difficulties (Bluehardt et al, 1995; Bluehardt and Shephard, 1995). With the help of this information, the aim of the study; it is aimed to investigate the influence of physical activity levels of the disabled students having learning difficulties on their learning ability.

## 2. Method

Searching group of the study was defined the reluctant students chosen from the primary school first level students in Kars city center. After getting the necessary permission each student was informed about the content of the study and their written approvals were taken. The searching group included forty (40) learning disabled students. Their physical activity levels defined by International Physical Activity Questionnaire (UFAA) (Craig et al, 2003). The questionnaire's reliability and validity study was made up in Turkey. In this study, the short form of it including "last seven days" was used to evaluate the students' physical activity levels. The physical activity levels were classified such as; physically nonactive (<600 MET-minute/week), low level of physical activity (630-300 MET-minute/week) and having enough physical activity level (useful for health) (>3000 MET-minute/week) (Öztürk, 2005). "The learning Incapacity Introducing Questionnaire" teacher form was used to define the students learning incapacities. The questions of this questionnaire were answered like completely accepted, mostly accepted, accepted and nonaccepted. BKI: was accounted for all the children with the help of the balance called "Body Weight (kg)/Length of Body (m)<sup>2</sup>". The results of BKI were classified according to WHO 2007 5-19 age reference values (WHO, 2007b) and the person's values that WHO suggests. SPSS 17.0 package programme was used to evaluate the results statistically. "t" test analysing method was used to define the difference between percentage rates and physical activity level and learning ability. The results were given such as "average ± standard deviation". P<0.05 was found statistically meaningful.

## 3. Findings

The age, weight and length of boy and girl students taking place in the study were compared and summarized in table-1. After the comparison meaningful differences between age, weight and length were monitored (p>0.05).

**Table-1: The age, weight and length variable of the Girl and Boy Students Having Learning Difficulty. The data were presented such as average ± standard deviation**

Future	Boy (n=25) <u>X±SD</u>	Girl (15) <u>X±SD</u>	<u>*p value</u>
Age	9,68 ± 0,2 0	9,66 ± 0,21	p> 0,05
weight	31,52 ± 7,26	31,40 ± 6,45	p> 0,05
Length	133,70 ± 4,06	130,73 ± 3,52	p> 0,05

X±SD: average ± standard deviation

When we classified the physical activity levels; %17 (n=7) were nonactive, %71 (n=28) had low physical activity level, %12 (n=5) had enough physical activity level (Table 2).

**Table-2: The Physical Activity of Students Having Learning Difficulties**

Physical Activity	The Level of Physical Activity (%)	Total (n= 40)
Physically nonactive	% 17	n = 7
Lower level of physical activity	% 71	n = 28
Enough physical activity level	% 12	n = 5

It was found out that %23.4 of girl and boy students while had the value of ( $\geq -1SD < -1 SD$ ) in (BKI) index, %20 of the students were called a little fat and %32.5 of the students were also fat (Table-3).

**Table-3: The Score of (BKI) Z of Body and Mass Index of Students Having Learning Difficulties**

Sex	< -2 SD Very Weak		$\geq -2 SD < -1$ Weak		SD $\geq -1 SD < -1$ Normal		SD $\geq 1 SD < 2 SD$ A little Fat		$\geq 2 SD$ Fat		Total n
	n	%	n	%	n	%	n	%	n	%	
Boy	3	12	4	16	5	20	5	20	8	32	25
Girl	1	6,7	2	13,3	4	26,7	3	20	5	33,3	15
Mean		9,4		14,7		23,4		20		32,5	100

Students' physical activity levels were defined by International Physical Activity Questionnaire. When it is looked at the physical activity levels' MET-minute/week values, while it wasn't found meaningful difference ( $p < 0.05$ ); between physically nonactive group and the students having learning difficulties, it was found out that when the physical activity levels between the groups having lower and enough physical activities were increased and then the learning abilities increased too. Especially it was understood that in the group having enough physical activity the increasing level was more than the others ( $p < 0.05$ ,  $p < 0.01$ ) (Table-4).

**Table-4: The Comparison of Physical Activity MET – second/week level and Learning Abilities of the Students Having Learning Difficulties. The data were presented such as mean (average)  $\pm$  standard deviation.**

Physical Activity	UFAA Values <u><math>\bar{X} \pm SD</math></u>	Learning Levels <u><math>\bar{X} \pm SD</math></u>	<u>*p value</u>
Nonactive (MET-minute/week)	14,27 $\pm$ 10,50	57,00 $\pm$ 0,816	$p > 0.05$
Lower activity level (MET-minute/week)	64,50 $\pm$ 26,30	37,35 $\pm$ 1,061	$p < 0.05$
Enough activity level (MET-minute/week)	4,01 $\pm$ 5,80	8,40 $\pm$ 1,14	$p < 0.01$

#### 4. Discuss and Result

The students with learning difficulties have special features and different learning styles. For that reason, each child has ability to be successful in his or her own studies. Some different teaching strategies must be applied by the teachers especially. Learning difficulty beside showing the child's mental level, it is getting knowledge, evaluating, analyzing and keeping and the motor ability handicaps (Sulaiman et al, 20011). Effective teaching and classroom managing techniques must be used for the students, having learning difficulties, to be successful. The children having learning difficulties on a few discipline areas may need individual education. It is necessary for these children to provide supportive private education services.

On the other hand, although we know the use of healthy life in many developed and developing countries either the old or the primary school children's physical activity levels decrease and the amount of obese persons increase day by day. It is necessary for the children to make them have the habit of making saving physical activities that increasing their physical activity levels and making them continue sport in adult age too. In a completed study it was pointed out by Sibley and Etnier (Brisswalter et al, 2002) that the children's physical activity levels are related to the cognitive operations. Similar to this study, Brisswalter and his friends pointed out depending on their study (Sibley, and Etnier, 2003) that the physical activities having %40-80 amplitude and more than 20 seconds were effective on the children's decision making and sensory abilities. Of course the disabled children having learning problems may have more probability of being face to face different problems from being led to less active and sedanter life.

Children spend most of their time in their schools by living. For that reason the importance of physical activity and physical training lessons of physical education are not able to be disregarded. On the other hand the schools are very important to put the positive habits gained at schools into living style (Datar and Sturm, 2004). Davis and Cooper pointed out with the help of their study (Davis and Cooper, 1934) that the sportive activities in the school have positive effect on the children's academic success. And also similar to this study in another research made by Cooper and his friends 2200 on American High School Students (Cooper et al, 1999) it was defined that physical and sport activities had a definitive effect on the children's academic success. On the other hand, Rasberry and his friends (2011), studied on 50 academic paper about 8-18 years old children and they found out that there were 251 relations. These data also had some features to support the data of this study.

And also in this study, age, weight and height of boy and girl students were compared, as a result a meaningful difference was found between the two groups' age, Weight and height. When we classified the physical activity levels of the disabled children having learning difficulty, it was defined that

%17(n=7) were physically nonactive, %71 (n=28) had lower level of physical activity, %12 (n=5) had enough physical activity level. According to the normal body mass index (BKI) it was found out that while %23.3 of boy and girl students had ( $\geq -1SD < -1$ ), %20 were a little fat, %32.5 were fat. While it wasn't found meaningful difference between physically nonactive and the other group having learning difficulty, it was understood that when the physical activity levels of the groups having lower physical activity and the group having enough physical activity increased their learning abilities increased too. Especially it was defined that the increasing amount of the group having enough physical activity was more than the others. According to the data handed the obesity and obesity position are very important problems, because of attending limited physical activities the sequence of being seen obese and too fat for the children having learning difficulties increase. For that reason, providing children's attending of physical activities actively becomes especially important. When the other and different studies about learning of children having learning difficulties were studied on it was understood that they focused on physical activity levels.

In some studies (Reynolds et al, 2003; Reynolds and Nicolson, 2007) it was defined that the physical activity reasoned lessening the reading difficulty, some important developing such as balance and coordination education. Like the same results, at the end of 10 weeks' physical activity the behavioural development and academic proficiency perception of the children having learning difficulty increased (Medcalf et al, 2006). Nevertheless, it was observed that the self – respect of students having high physical activity level was high and the anxiety levels were lower. At the same time, when it is looked at the relations between physical activity and academic performance it was defined that it influenced the students' learning and cognitive developing levels positively (Troost, 2007).

As a result, the students having learning difficulty must be gained regular physical activity habits beginning from the early ages. Educationalists must apply the programs such as physical activity, sport and physical training to reach all the academic standards to understand academic relations. At least one activity must be done a day to develop the physical activity levels of the children. As a result, it was defined that there was a meaningful relation between the physical activity level and learning success level of the children having learning difficulty. For that reason we believe that the primary school students having learning difficulty must be directed to sporting activities and increased the facilities because of making the learning easy and increasing the academic success.

## 5. References

- Bluehardt, M.H., Wiener, J., Shephard, R.J. (1995). Exercise programmes in the treatment of children with learning disabilities. *Sports Med*, 19:55-72.
- Bluehardt, M.H., Shephard, R.J. (1995). Using an extracurricular physical activity program to enhance social skills. *J Learn Disabil*, 28(3):160-169.

- Brisswalter, J., Collardeau, M., Rene, A. (2002). Effects of acute physical exercise characteristics on cognitive performance. *Sports Med*, 32:555-566.
- Cooper, H., Valentine, J.C., Nye, B., Lindsay, J.J. (1999). Relationships between five afterschool activities and academic achievement. *J Educat Psychol*, 91:369-378.
- Craig, C.L., Marshall, A.L., Sjostrom, M., Bauman, A.E., Booth, M.L., Ainsworth, B.E. (2003). International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc*; 35:1381-95.
- Datar, A., Roland Sturm, R. (2004). physical education in elementary school and body mass index: evidence from the early childhood longitudinal study. *Am J Public Health*; 94:1501–1506.
- Davis, E.C., Cooper, J.A. (1934). Athletic ability and scholarship: A resume of studies comparing scholarship abilities of athletes and non-athletes. *Res Quart*, 5:69-78.
- Karlıdağ, F., Suna, E. (2003). Educational Journal of Children Having Learning difficulty, Number: 39. Ankara.
- Kırcaali- İftar, G. (1992). Learning Difficulties Such as a Special Education Category. *Anadolu University, Education Faculty Journal*, 5, 1-2, 95-119.
- Korkmazlar, Ü. (1992). Special Learning Disability and Diagnostic Methods About 6-12 Years Old Primary School Students, Istanbul University, Health Sciences Institute, PhD Thesis.
- Kramer, A.F., Erickson, K.I., Colcombe, S.J. (2006). Exercise, cognition, and the aging brain. *J Appl Physiol*, 101:1237-1242.
- Medcalf, R., Marshall, J., Rhoden, C. (2006). Exploring the relationship between physical education and enhancing behaviour in pupils with emotional behavioural difficulties. *Support for Learning*, 21:169-174.
- Niemann, P. (2002). Psychosocial Aspects of Physical Activity. *Pediatr Child Health*. 7(5):309-312.
- Öztük, M. (2005). International Physical Activity Questionnaire's Credibility and Reliability and Defining the Physical Activity Levels about the students Having University Education, [Science Expert Thesis]. Ankara, Hacettepe University Health Sciences Institute.
- Raspberry, C.N., Sarah, M., Lee, S.M., Leah Robin, L., Laris, B.A., Russell, L.A., Coyle, K.K., Nihiser, A.J. (2011). The association between school-based physical activity, including physical education, and academic performance: A systematic review of the literature. *Preventive Medicine*.
- Reynolds, D., Nicolson, R.I. (2007). Follow-up of an exercise-based treatment for children with reading difficulties. *Dyslexia*, 13:78-96.
- Reynolds, D., Nicolson, R.I., Hambly, H. (2003). Evaluation of an exercisebased treatment for children with reading difficulties. *Dyslexia*, 9:48-71.
- Rovio, S., Kareholt, I., Helkala, E.L., Viitanen, M., Winblad, B., Tuomilehto, J., Soininen, H., Nissinen, A., Kivipelto, M. (2005). Leisure-time physical activity at midlife and the risk of dementia and Alzheimer's disease. *Lancet Neurol*, 4:705-711.
- Sibley, B.A., Etnier, J. (2003). The relationship between physical activity and cognition in children: a meta- analysis. *Pediatr Exerc Sci*, 15:243-256.
- Sulaiman, T., Baki, R., Zabariah, P., Rahman, M.A. (2011). The Level of Cognitive Ability among Learning Disabilities Children in Malacca Malaysia. *International Journal of Psychological Studies* Vol. 3, No. 1; June.
- Taras, H. (1995). Physical activity and student performance at school. *J Sch Health*, 75:214-218.
- Trost, G. (2007). Active Education: Physical Education, Physical Activity and Academic Performance. Fall Research Brief. San Diego, Calif: RWJF, Active Living Research.
- Trudeau, F., Shephard, R.J. (2008). Physical education, school physical activity, school sports and academic performance, *International Journal of Behavioral Nutrition and Physical Activity*, 5:10.
- WHO. (2007b). Growth reference data for 5-19 years. [www.who.int/childgrowth/en/](http://www.who.int/childgrowth/en/)