

# The Effect Of Sports On The Attention Levels Of Primary School Students

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## Abstract

The aim of this study was to investigate the effect of sports on the attention levels of primary school students. Participants were 150 female and 170 male Primary education students aged 12-14 years. Student's t-test was used for paired categorical comparisons between the groups. While there was a statistically significant difference between girls and boys in terms of psychomotor speed, selective attention level and special learning difficulty values ( $p < 0,05$ ), no statistically significant difference was found for concentration performance and total item error percentages ( $p > 0, 05$ ). While there was no statistically significant difference between the psychomotor speed scores of both boys and girls in the comparison between sport group and non-sport group ( $p > 0,05$ ), there was a statistically significant difference in the level of selective attention, learning disability, concentration performance and total item error percentage ( $p < 0.05$  and  $p < 0.001$ ).

Conclusion: It was determined that the attention levels of primary school students doing sports were better than those who were not doing sports. In the study, girls' psycho-motor speed scores and selective attention level scores were higher than boys' scores. Special learning disability scores were higher in boys than girls. It is recommended that all students in primary schools be involved in sporting activities to raise their attention levels.

**Key words:** Sport, D2 Attention test, Student

## INTRODUCTION

Attention is the selection and extraction of any of the sensory stimuli among others according to specific targets. Attention is directed and structured in terms of the needs of the body (16, 30). Memory or attention indicates the process of perceiving, organizing, storing and recalling and using the stimuli when they are needed (5). Attention includes willingness in people and changes according to environmental conditions and topics of interest (26). It is stated that 5% of the people in the world experience attention disorder (31). However, it has been stated that attention deficit affects about 4% to

6% of school children in general (25). Attention is important in many activities related with learning. There are many differences between the learning levels of a student who has a good level of attention and a student who is careless or who has a low level of attention (7). Attention requires continuity especially for adequate performance appropriate for age. Sustained attention is being selective and the ability to act and continue when focusing is appropriate and necessary (21). Students' mental and physical performance is affected by many factors. For example, the success of the athlete is influenced by the development of strength, speed, flexibility and leap motor performance (20). Physical

fitness of students; age, height, body weight, strength, body component, flexibility, heart rate and blood pressure are affected by many factors (24). Again, a good body posture or posture development is required in the performance development of students (37). Sports has a positive effect on physical and mental development of students. It is stated that children who do sport regularly have higher levels of focus, discipline and concentration when compared with their peers (22). It is stated that a training including movement has a positive effect on the development of attention and memory (4).

In individuals with attention deficit, behaviours such as having difficulty in performing the tasks they take over, moving on to another task before finishing one, pretending to be listening to what is being said and immediate distractions with external stimuli are observed (17). It is imperative to know which basic skills should be paid attention to in order to make sufficient or appropriate activities, how to direct attention to another goal when necessary and how to pay attention to this goal (28). In the field of sports, performance is related to physical and motoric abilities in addition to cognitive and perceptual skills (9). The capacity to control thought mechanisms and pay attention to related issue is important for effective performance in sport. As a result of losing the capacity to pay attention with distractions in attention and blur of mind, an athlete's not being able to show the required performance shows the value of selective attention and sustained attention (1). It is necessary for an athlete to have a good capacity to pay attention to a specific issue in order to show top performance (12).

The aim of this study is to compare the attention levels of primary education students who are doing sports and those who are not doing sports.

## METHOD

**Participants:** The participants are 150 female and 170 male primary education students aged between 12 and 14. While some of the students are participating in sport activities for three days a week, others are not participating in any sport actively.

### Data Collection Tools

In addition to personal information form, "D2 Test of Attention" was used.

**D2 Test of Attention:** D2 Test of Attention, which was adapted by Toker (33) was thought as

appropriate for 11-14 age group. In D2 Test of Attention, there are 14 lines with 47 characters on each line. On each line, there are 16 different characters consisting of the letters "p" and "d". There are marks above or below these letters (one, two, three or four marks, some of which are above the letters and some of which are below the letters). During the test, the test taker has to scan and cross out the characters "d" with two marks. The test taker is given 20 seconds for each line. In the assessment of the test, total number of items crossed out (psychomotor speed), the number of characters not crossed out and ignored (level of selective attention), total number of characters crossed out incorrectly (special learning difficulty) and total item-error scores are taken into consideration. Psychomotor speed: It is the number of crossed out items or the total number of characters crossed out. It is the numerical value of the performance for all related or unrelated characters crossed-out. It shows the highness level of psychomotor speed. Level of selective attention: It is the number of characters which are not crossed out and ignored. The higher number of these indicates that the level of attention is low and the quality of performance is inadequate. Special learning difficulty: It is the total number of characters crossed-out incorrectly. Higher number of these indicates special learning difficulty, having difficulty in obeying instructions, carelessness and deficiency in differentiating what one sees. Total item-error: It is the subtraction of error scores from the total number of characters crossed out. Total item-error is also expressed as total performance score. Concentration performance: It is found by subtracting the number of characters crossed out incorrectly from the number of characters crossed out correctly. It can be considered as the best index for performance accuracy and speed coordination (10, 12, 36).

### Data Analysis

SPSS 23.00 package program was used in data analysis. Kolmogov- Smirnov and Shapiro-Wilk normality distribution of the variables was conducted. T-test was conducted for paired categorical comparisons between groups.

**RESULTS**

**Table 1.** Comparison of test results according to genders

	Gender	n	Average	St. deviation	t-test	p
Psychomotor speed	Female	150	433.76	86.36	2.97	0.032*
	Male	170	408.59	92.32		
Level of selective attention	Female	150	43.95	39.75	2.55	0.041*
	Male	170	35.15	35.20		
Special learning difficulty	Female	150	18.32	16.22	-2.92	0.036*
	Male	170	23.54	21.48		
Concentration performance	Female	150	117.59	40.27	1.43	0.12
	Male	170	111.25	43.86		
Total item error percentage	Female	150	85.64	25.34	1.25	0.15
	Male	170	85.71	27.26		

\*p<0.05

The psychomotor speed score is 433.76 in women and 408.59 in men. Concentration performance is 117.59 in women and 111.25 in men. While there is a significant difference in psychomotor speed scores according to gender (p <0.05), there is no significant difference between concentration scores (p> 0.05).

**Table 2.** Comparison of D2 Test of Attention between sport and non-sport group in terms of gender

Gender	Variables	Sport group		Non-sport group		t-test	p
		Average	St.dev.	Average	St.dev.		
Female	Psychomotor speed	438.03	75.00	430.00	90.03	1.97	0.23
	Level of selective attention	33.12	25.87	56.22	42.51	5.12	0.001**
	Special learning difficulty	16.22	16.41	20.70	16.10	2.42	0.036*
	Concentration performance	127.93	30.53	105.86	40.52	5.18	0.001**
	Total item error percentage	88.73	24.15	82.11	25.30	2.56	0.028*
Male	Psychomotor speed	420.93	80.90	397.48	90.20	1.95	0.36
	Level of selective attention	30.20	24.23	39.62	41.12	2.15	0.042*
	Special learning difficulty	21.10	18.12	25.75	20.30	2.32	0.039*
	Concentration performance	123.39	30.26	100.30	40.90	5.44	0.001**
	Total item error percentage	87.12	22.80	83.55	22.51	2.10	0.044*

\*p<0.05 and \*\*p<0.001

While the psychomotor speed score in women is 438.03 points in sports, it is 430.00 points in non-sports. Concentration score is 127.93 points for those who do sports and 105.86 points for those who do not do sports. In men, the psychomotor speed score is 420.93 points in women who do sports, while it is 397.48 points in those who do not do sports. The concentration score is 123.39 points for those who do sports and 100.30 points for those who do not do sports. While there is no significant difference between the psychomotor speed scores of those who do sports and do not do sports in both women and men, there is a statistically significant difference between concentration scores (p <0.001).

**DISCUSSION**

In some of the studies conducted on children in Turkey, no gender differences have been reported in terms of attention (6,23,35). In a study, Renk (32) reported no significant difference between genders in terms of concentration performance and attention deficiency problem percentage. Özcan (29) found

that there were no statistically significant differences between students' general attention percentage scores and that general attention percentages of female and male students were similar. Bektaş (10) found that girls had better total performance (psychomotor speed), level of selective attention and concentration performance than boys. In some of the studies conducted on attention, it is stated that girls have better attention gathering skills than boys (10,11, 33). In this study, while there were statistically significant differences between girls and boys in terms of psychomotor speed, level of selective attention and special learning difficulty values (p<0,05), no statistically significant difference was found in terms of concentration performance and total item error percentage values (p>0,05). In the study, girls were found to have higher psychomotor speed scores and level of selective attention scores than boys. On the other hand, boys were found to have higher special learning difficulty scores than girls. No difference was found between boys and girls in terms of concentration performance. Different results in studies can be

resulting from the differences in student groups in addition to different factors (age, degree of being active, etc.). In the present study, boys were found to have higher special learning difficulty. In other words, girls were found to have better attention gathering skills than boys.

Yaycı (36) found that the total number of crossed-out items, the number of errors subtracted from total number of crossed-out items and concentration performance of the group defined as active were significantly higher than those of the group defined as passive. In a study conducted by Kartal et al. (22), children who were engaged in the sport of fencing were found to have better attention levels than children who were not engaged in the sport of fencing. In a study by Göktepe et al.(15), children who were engaged in the sport of skiing were found to have better attention levels than children who were not engaged in the sport of skiing. Asan (8) stated that table tennis exercises had a positive effect on attention characteristics of children. Akandere et al.(3) found that the experimental group in which educational games were applied for 8-week had better attention values than the control group. Adsız (2) found that primary education students who were doing sports had 83% times higher attention than those who were not doing sports. Altun et al. (6) found a significant difference between the attention levels of children in favour of the experimental group and found that intelligence games were effective in developing level of attention. People hold attitudes and beliefs that influence how they experience, express, and respond to emotions (18). In their study, İbiş and Aktuğ (19) found that children who were doing sports had better attention than children who were not doing sports. Tunç et al. (34) found an increase in the post-test attention levels of children who played golf for 8 weeks when compared with pre-test levels. Atakurt et al. (5) stated that orienteering training had positive effects on attention. Akcınlı (4) stated that movement training had positive effects on attention and memory development in 8-year-old children. In one study, it was found that with specific music accompanied rhythmic movements, social behaviour problems and hyperactivity levels of children who had attention deficit and hyperactivity disorder decreased and consequently their concentration and attention ability increased (27). It has been reported that physical activity increases flow of blood to the brain (14). When we look at the chronic effects of sportive activities which develop heart and veins, it

is emphasized that activities have positive effects on attention and behaviours (13). In this study, while the psycho-motor speed of girls who did sports, in other words their total number of crossed out characters, was 438.03; this number was found as 430.00 in the group which did not do sports. While concentration performance of the girls who did sports was found as 127.93; it was found as 105.86 in the group which did not do sports. While the psycho-motor speed of boys who did sports, in other words their total number of crossed out characters, was 42.93; this number was found as 397.48 in the group which did not do sports. While concentration performance of the boys who did sports was found as 123.39; it was found as 100.30 in the group which did not do sports. In the comparison of groups in terms of the state of doing sports, while no statistically significant difference was found between the psychomotor speed scores of both girls and boys ( $p>0,05$ ), statistically significant difference was found between their selective attention levels, learning difficulty, concentration performance and total item error percentage ( $p<0,05$  and  $p<0,001$ ). While the concentration performance and selective attention levels of children who did sports increased, their special learning difficulty decreased.

**Conclusion:** It was found that the attention levels of primary school students who were doing sports and those who were not doing sports were better in favour of those who were doing sports. In the study, girls' psycho-motor speed scores and selective attention level scores were higher than boys' scores. Special learning disability scores were higher in boys than girls. It is recommended that all students in primary schools should be involved in sporting activities to raise their attention levels. Exercises to correct attention disorders can be recommended to primary school children. Attention-enhancing activities for the branches can be made for children actively involved in sports.

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