

# Investigation of the effects of six-weeks of regular table tennis education on attention levels of primary school children

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## ABSTRACT

Attention deficit is one of the child ailments that most parents worry about. To shed light on this problem, the aim of this survey is to investigate the effects of 6-weeks regular table tennis education on the attention levels of school children. The research was carried out on 11 elementary school students ( $9.82 \pm 2.23$ ) who have never got table tennis education before. These children trained by basic table tennis exercises for 6-weeks, two days a week. Bourdon Attention Test, developed by Bourdon (1955), was used before and 6-weeks after starting table tennis training to determine children's attention levels. In order to measure the level of attention, the number of letters that were marked incorrectly and the number of letters not marked were counted. These data were analyzed with paired sample t test. As a result, it was found that 6-weeks of regular table tennis exercises significantly affected the number of not marked characters and affected the level of attention positively ( $p < 0.05$ ). It was also found that the gender of the children and the type of school in which they were educated had no effect on this result.

**Keywords:** Attention, attention deficit, children attention, table tennis benefits.

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## INTRODUCTION

Attention can be defined as the state of being ready for any action that may come from outside. James (1890) defined attention as *"having one of the concrete or abstract thoughts together with consciousness"*. It is similar with Yazgan (2002) who defined attention as *"a general concept that that includes all the processes of prioritizing, queuing, planning and organizing"*. However, if motion-based determination is required, it is possible to specifically mention the importance of hand-eye coordination because this coordination is the basis of people's movements. Apart from that, the sense of hearing is also very important. The sounds from our environment enable us to turn our attention to that direction. In addition, attention can be mentioned mentally. For example, when reading a book or watching a video, the mind must focus in this direction, that way

attention is also mentally important.

One of the main factors that create attention is mind. The mind communicates which sense organ to use against movements from the environment. If there is a need for movement, hand-eye coordination is required. If there is a sound stimulus, an attempt is made to head that way. If there is a need for focus, the mind is used. Other sensory organs are among the factors that create attention. Attention is very important and determinant since childhood, and attention development plays a big role in the later ages of the child (Ozturk, 1995).

Adults are successful in selective attention, but children are more successful in attention than adults. Especially in preschool children, their learning abilities are very fast and they learn easily whatever is taught. Children can quickly see the details and use them elsewhere.

However, children with attention deficit do not listen to what is said, do not perform the task given, and turn their attention to another direction. If the child does not complete the given task and passes to the other, the lack of attention can be mentioned. Attention time in children varies according to their personality and interests. 'Be careful', 'look carefully', etc, are commonly used in the education system. Rather than rhetoric, it is important to remember that the environment is a learning and modeling area for children (Megep, 2006). One of the modeling areas where this is used as the best opportunity is sports.

Sports have many branches and they are open to the participation of children under different conditions. Table tennis is one of the sport branches where there is no contact with the opponent and the performance expectation is not based on excessive use of force. It is not only a branch that needs long-term attention until the ball falls to the ground, but also a branch in which the one who loses attention will lose the score.

The relationship between table tennis and attention has been investigated in many studies. Tsung-Min et al. (2020) investigated the processes of attention with their reactive motor performances in elite table tennis players. Another research was done by Baidiuk et al. (2019) who investigated the effects of table tennis training on the physical condition of 13-14 year old children for 10 months. On the other hand, Asan (2011) found that table tennis exercises improve children's attention skills within 8 weeks.

When the literature is reviewed, it is thought that the effects of table tennis education on children's attention need further investigation. Therefore, the purpose of this study was determined to the study of the effect of 6-week regular table tennis training on the attention levels of primary school children.

## MATERIALS AND METHODS

The research was carried out on 11 elementary school students who have never received table tennis training before, with an average age of  $9.82 \pm 2.23$ . These children received basic table tennis education for 6-weeks, 2 days a week. Only basic forehand and

backhand drive exercises were used in the education. It is aimed to play as much as possible without dropping the ball. Bourdon Attention Test was used before and 6-weeks after starting table tennis exercises in order to determine children's attention levels. The most recently used form of the Bourdon Attention Test was developed by Benjamin Bourdon in 1955 (Fliegner, 1998). Each child was given 5 min to complete the test. In this test, there are 660 small spelling characters that are formed from 20 lines and placed randomly. The children were asked to successfully select the letters "a", "g", "b" and "d", which resemble each other from the created test paper by pencil. In order to measure the level of attention, the number of letters that were marked incorrectly and the number of letters not marked were counted. These data were analyzed by paired sample t test.

## FINDINGS

In this section, children's attention performances are examined as pretests before table tennis exercises and posttests after table tennis exercises. The results are presented in Tables 1, 2 and 3.

When the Table 1 is examined, a significant difference was found between the pretests and posttests of the children participating in the research. According to this comparison, the children marked more letters after getting table tennis education. However, according to the other comparison in the table, there was no significant change in the number of letters they made incorrect markings.

In Table 2, attention levels of children participating in the study were examined as pretests and posttests according to their gender. As a result of this comparison, there is no significant difference in children's attention levels depending on their gender.

Quite similar with Table 2, the attention levels of the children participating in the study were examined in Table 3 as pretests and posttests according to the type of school which they got education. According to this comparison there is no significant difference between pretests and posttests results in children's attention levels depending on their school type.

**Table 1.** Analysis of the effects of table tennis exercises on children's attention performance.

Attention test	n	Min	Max	Mean	Ss±	t	p
Number of letters not marked (pretest)	11	10	83	50.73	22.61	4.211	0.002*
Number of letters not marked (final test)	11	3	51	25.82	17.99		
Number of letters incorretly marked (pretest)	11	0	2	0.27	0.65	-0.516	0.617
Number of letters incorretly marked (final test)	11	0	3	0.45	1.04		

\*p < 0.05

**Table 2.** Analysis of children's attention performance by gender.

Attention test	Gender	n	Min	Max	Mean	Ss±	t	p
Number of letters not marked (pretest)	Men	8	10	73	46.13	22.69	-1.116	0.293
	Women	3	41	83	63.00	21.07		
Number of letters not marked (final test)	Men	8	3	51	23.88	18.90	-0.565	0.586
	Women	3	12	47	31.00	17.69		
Number of letters incorretly marked (pretest)	Men	8	0	2	0.38	0.74	0.844	0.420
	Women	3	0	0	0.00	0.00		
Number of letters incorretly marked (final test)	Men	8	0	2	0.25	0.71	-0.565	0.586
	Women	3	0	3	1.00	1.73		

**Table 3.** Analysis of children's attention performance by their school type.

Attention test	Type	n	Min	Max	Mean	Ss±	t	p
Number of letters not marked (pretest)	State	4	29	83	60.00	22.54	1.031	0.329
	Private	7	10	73	45.43	22.55		
Number of letters not marked (final test)	State	4	0	0	0.00	0.00	-0.983	0.351
	Private	7	0	2	0.43	0.79		
Number of letters incorretly marked (pretest)	State	4	5	34	18.75	12.84	-1.441	0.200
	Private	7	3	51	29.86	20.12		
Number of letters incorretly marked (final test)	State	4	0	3	0.75	1.50	0.697	0.504
	Private	7	0	2	0.29	0.76		

## DISCUSSION AND CONCLUSION

The findings obtained from this study, which was carried out to examine the effect of 6-week regular table tennis exercises on the attention levels of primary school children, were discussed in light of the relevant literature.

Sports activities need many personal features in terms of the abilities they contain. Efforts to sustain sports activities affect sports skills as well as other personal characteristics. There are many studies in the literature that examine this relationship (Junbao, 2005; Gayles and Hu, 2009; Pfeifer and Cornelißen, 2010). One of the most important of these personal characteristics is attention. Previous studies examined the effects of attention on sports, as well as studies examining the effects of sport on attention (Brisswalter et al., 2002; Tantillo et al., 2002; Hung et al., 2004; Memmert et al., 2009; Moen et al., 2016). Through this mutual relationship, the contributions of the benefit of people and especially children are emphasized.

One of the most important issues that families have been complaining about recently is attention deficit and hyperactivity in their children (Katsuki et al., 2020; Si et

al., 2020). After trying many methods to eliminate attention deficit in children, one of the most effective methods is sports. As a sports branch, table tennis is much easier to reach compared to others. It is built on skills that require long-term attention and focus, and these skills develop as people continue to play. The effects of table tennis training applied in different conditions on children's attention level seem to be examined in a few studies in the literature. Pan et al. (2016) examined the effects of 12-week table tennis exercises on many features of children. At the end of this period, they recommended that table tennis should be applied as a treatment to children with attention deficit. Asan (2011) investigated the effect of 8-weeks table tennis exercise on attention in children aged 9 to 13 and found that table tennis exercise applied to the experimental group caused a significant difference in children's attention levels. In our study, the effects of 6-weeks table tennis exercises on the attention levels of primary school children were examined. Similar results observed in the literature were obtained in a 6-weeks period. While examining Table 1, a significant difference was found between the pretests and post-tests of the

children participating in the research. According to this comparison, the children marked more letters after getting table tennis education. This result proves that children accelerate in the attention test with the effect of playing table tennis. On the other hand, the fact that there is no significant difference in the number of incorrectly marked letters in the same table compared to the pretest also proves that children do not make mistakes but accelerate. This result can be explained by the contribution of table tennis to visual ability, as evidenced in the study of Whiting and Sanderson (1972). On the other hand, the effects of the school type on which children receive education are also discussed (Epple and Romano, 1998; DuPaul et al., 2012). Depending on this argument, the analysis made in Table 3 found that children's attention skills do not differ significantly according to the type of school they received education. Therefore, it turns out that the statistically significant attention skill gains shown by children in Table 1 do not depend on their school type. In addition, children's attention levels analyzed in Table 2 were based on gender. According to this analysis, there is no gender-related reason for the significant difference in Table 1. Because according to the data in Table 2, the gain in children's attention level affected both genders without any difference.

As a result of this research, 6-week regular table tennis training has been found to have a positive effect on primary school children's attention levels. It was determined that this positive effect does not differ according to the gender of the children and the type of school they received education. Therefore, it is thought that 6-week table tennis education, which is shorter than the training period in the literature, contributes to the attention levels of primary school children regardless of gender and type of school. Thus, a solution can be mentioned for parents who complain about the problems of attention deficit and hyperactivity in their children.

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