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## AN ANALYSIS ON THE EFFECTS OF TABLE-TENNIS SPORTS ON THE DISTRACTION OF SECONDARY-EDUCATION STUDENTS

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### ABSTRACT

In this study we aimed to analyze the effects of table-tennis on the distraction of secondary-education students practicing and not-practicing table-tennis sport. Research sampling consisted of 80 students (n=80) currently studying in Adil Karaağaç Anatolian Technical Vocational High School in Selçuklu district of Konya city and students were within the age range of 14-18. Mean age of students was 15,53±0,80. 40 students (n=40) who regularly practiced table-tennis sports formed the experimental group whereas 40 students (n=40) not-practicing the sports constituted control group. Bourdon (1955) Attention Test was administered to students in both control and experimental groups. In the analysis of data; SPSS 20 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) statistical package program was employed.  $p<0,05$  was the accepted significance level for the conducted tests.

It was then detected in the study that in terms of attention levels there was a statistically significant difference between groups practicing and not-practicing the sports and that the group engaged in sports exhibited higher

values of attention level compared to the group not-practicing the sports ( $P<0,05$ ). In the research groups, an analysis with respect to gender revealed that among boys and girls practicing the sports, attention levels were higher than girls and boys not-practicing the sports and there was a statistically significant difference in between ( $P<0,05$ ) analyzed groups. With respect to factors such as having a divorced or united family, a room of his/her own, a history of disease, age, monthly income level of family, number of siblings, how many hours slept in a day; an analysis of attention level showed among the participants of the research that there was not a statistically significant difference between groups ( $P>0,05$ ).

At the end of this study it was unveiled that practicing table-tennis sports rendered a positive effect on the development of children's attention levels. Within that context it can be argued that table-tennis sports could have a positive effect on the attention levels of children with distraction.

**Key Words:** Distraction, table-tennis, secondary-education, sports

## INTRODUCTION

Currently one of the factors negatively affecting students' success is distraction. Rapid technological changes such as computer games and visual media grabbed students' attention which resulted in the fact that main duties such as sports, painting, music and academic career were pushed into the background by students. Hence this study plays a vital role in determining the underlying cause of the failure measured in education system.

Attention is vital functions of nervous system in accordance with the needs and objectives in response to environmental stimulants (Kolb & Whishaw, 1996; Banich, 1997). Another definition of attention is that it is a phenomenon that can make it easy to react against a certain condition or stimulus thanks to the harmony of sensory organs, (Tunç, 2013). Attention also refers to the process of integrating emotions to what we perceive upon balancing by selecting the essential ones from what we have perceived. Attention and ability to focus on a task upon checking the stages of thought are essential factors to succeed in sports (Williams, 1993). Two types of attention call for attention. The first type is the attention that filters outside world. The mind receives and processes stimulus from the outside world. In this type of attention, any given changes in one's surrounding are aimed to be perceived and comprehended. The other type is selective attention in which the mind focuses on specific stimulants. In another saying, perceptual norms and selective perception take the front stage. In most cases it happens when the person pays attention to specific stimulants in line with dimension, color, frequency and expectations (Baltacı, 2005). To put this differently, attention is a deliberate process of focusing on stimulants (Dereceli, 2011). Sensory organs are stimulated by a variety of external stimulants. An individual cannot perceive all of those stimulants at one time since s/he has a limited perception capacity hence stimulants are selectively received (Bozan & Yasin, 2012).

Sports has been the focal point of studies on selective perception and concentration. Accordingly, to help athletes gain success in psychomotor skills, for an elevated concentration level it is suggested to focus on selective perception while ignoring irrelevant stimuli (Singer et al., 1991). In sports, focusing one's attention on a particular topic, a.k.a concentration, is one of the primary factors for success (Martens 1987; Nideffer & Sagal 1993). The failure of an athlete to gather his/her attention would lower his/her performance which clearly underlines the gravity of attention in sports (Albrecht & Fetz, 1987). Provided that an athlete loses his/her

attention and demonstrates a poor performance it is important to continuously share the attention (Çağlar & Korunç, 2006). That is to say, focusing on multiple points would significantly lower one's performance in a sports activity (Magill & Anderson, 2007). In order to positively impact sports performance, it is essential for athletes to focus on a specific target point that relates to one's objective. Provided that an athlete can maintain his/her attention before and during the competition despite the presence of excitement and psychological stress, s/he could then guarantee success (Tavacıoğlu, 1999).

Human beings cannot continuously focus on one single topic because due to mental and physical lethargy it is likely to shift or lose one's attention to different topics (Alp, 2011). Among the athletes it is aimed to achieve continuous attention on stimulants while spot and select only the data that matter. Attention plays a vital role to reach success in business life, sports and a number of domains in daily life. Attention may differ with respect to conditions and personal interests while attention also heightens motivation among athletes and children (Kumartaşlı & Baştuğ, 2010). Distraction is prevalent among children and most pervasive prior to age seven. In most cases it is perceived with hyperactivity that is not in parallel with the child's age (Çakaloz et al., 2005).

*Attention in Sports* can be defined as deliberate attention that entails a number of psychological functions related to perception, contemplation and imagination. In concentrated attention it surfaces as a talent fueling deliberate mobilization. In short the perception that we focus on moves towards our consciousness whilst remaining stimulants are unconsciously perceived (Tavacıoğlu, 1999).

Sport activities are organized in a variety of fields within the bounds of possibility in schools. Table-tennis is one of these sport branches. Table-tennis is a game in which 2 or 4 athletes reciprocally throw a small ball over a table that is halved by a file in its center (Erdil et al., 2013). In table-tennis there is intensive anaerobic energy but there is also a ratio of around 30% corresponding to aerobic energy (Bayrak, 2008).

Table-tennis started when grass tennis played in the 1880s was adapted as a game to play on dinner tables at that time. In 1890 on the other hand, it was named in England as Ping Pong or Whiff-Whaff game that followed basic rules. In 1901, Table-Tennis Federation and

rival Ping-Pong associations were founded in England and an instructional booklet was published for the very first game (Bayrak, 2008).

In table-tennis that requires a strong coordination between hand and eyes, it is essential to develop basic motor skills of concentration from early ages (Turhan et al., 2003).

### **Material And Method**

Sampling in this study consists of 80 students (n=80) within the age range of 14-18 currently studying in Adil Karaağaç Anatolian Technical Vocational High School in Selçuklu district of Konya city. Mean age of students included in the study is  $15,53 \pm 0,80$ . 40 students (n=40) who regularly practiced table-tennis sports formed the experimental group while 40 students (n=40) not-practicing the sports constituted control group. Bourdon (1955) Attention Test was administered to students in both control and experimental groups.

Developed by Bourdon in 1955, this test aimed to measure attention levels of individuals. Prior to administering the test, it is suggested to inform participants on the context of test and ask them to complete the distributed forms to collect personal information. The test in which random letters were placed on a page was then distributed to students. The letters were placed in regular and ordered spaces. On each page there were 20 lines and 407 letters. The number of all letters was known. Bourdon Attention Test is administered to individuals from age 9 to 20. In its test questionnaire, there are 150 (a) letters, 75 (g) letters, 50 (b) letters and 25 (d) letters. Students are asked to complete each part in 5 minutes and instruction is; “while analyzing one line you are expected to underline all of the a, b, d and g letters on the questionnaire; be careful not to underline only one letter but all of the a, b, d and g letters as seen in the line”. At the end of questionnaire practice, assessment is conducted by counting the underlined letters.

### **Statistical Analysis**

In the analysis of obtained data; SPSS 20(IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) statistical package program was employed. The mean  $\pm$  standard deviation, percentage and frequency values of data were harnessed. Variables were tested via Shapiro-Wilk and Levene Test upon checking their compatibility with prerequisites such as normalcy and homogeneity of variances. While

analyzing the data Independent 2 groups t test (Student’s t test) was used in the comparison of two groups, when prerequisites were not met in the comparison of two groups Mann Whitney-U test; in the comparison of three or higher numbers of groups One Way Variance Analysis and when the prerequisites were not met in Tukey HSD test of multiple comparison tests Kruskal Wallis and Bonferroni-Dunn test of multiple comparison tests were executed.  $p < 0,05$  was the accepted level of significance for the tests.

## Results

**Table 1.** With respect to students’ participation in sports activity, changes in their attention level

Sports activity	n	x	Sd	T	p
Students Practicing sports	40	103,13	6,97	3,745	,000 *
Students Not-practicing sports	40	95,93	9,96		
<b>Total</b>	80	99,53	9,28		

\* Intergroup significant difference ( $p < 0.05$ ).

As seen in Table 1; mean value of students practicing sports is (103, 13±6,97) higher than the mean value of students not-practicing sports (95,93±9,96) and also the difference in between is statistically significant ( $p < 0.05$ ).

**Table 2.** Attention changes with respect to gender

Sports activity	n	X	Sd	t	p
Girls Practicing sports	15	103,27	5,65	1,934	,047 *
Girls Not-practicing sports	17	98,24	8,56		
Boys Practicing sports	25	103,04	7,76	3,236	,002*
Boys Not-practicing sports	23	94,22	10,75		

\*Intergroup significant difference ( $p < 0.05$ ).

As can be inferred from Table 2 mean value of the attention test of girls practicing sports (103,27±5,65) is higher than the value of girls not-practicing sports (98,24±8,56) and the difference in between is statistically significant ( $p < 0.05$ ). Mean value (103,04±7,76) of the boys practicing sports is higher than the mean value of boys not-practicing sports (94,22±10,75) and the difference in between is statistically significant ( $p < 0.05$ ).

**Table 3.** Attention test changes with respect to factors such as having a divorced or united family, a room of his/her own, a history of disease

<b>Parents</b>	<b>n</b>	<b>x</b>	<b>Sd</b>	<b>t</b>	<b>P</b>
United	68	99,56	8,92	,064	,939
Divorced	12	99,33	11,55		
<b>Having a room of his/her own</b>	<b>n</b>	<b>x</b>	<b>Sd</b>	<b>t</b>	<b>P</b>
Yes	59	99,86	9,70	,546	,555
No	21	98,57	8,12		
<b>Having a history of disease</b>	<b>n</b>	<b>x</b>	<b>Sd</b>	<b>t</b>	<b>P</b>
Yes	17	99,82	8,83	,149	,878
No	63	99,44	9,46		

As shown in Table 3 there was not any statistical change in students' attention values with respect to factors such as having a divorced or united family, a room of his/her own and a history of disease.

**Table 4.** Attention test changes with respect to factors such as age, monthly income level of family, number of siblings, how many hours slept in a day

<b>Age</b>	<b>N</b>	<b>x</b>	<b>Sd</b>	<b>F</b>	<b>p</b>
Age 14	6	104,17	7,03	1,977	,125
Age 15	35	96,86	8,91		
Age 16	30	101,03	10,58		
Age 17	9	101,78	3,87		
<b>Monthly income level of family</b>	<b>N</b>	<b>x</b>	<b>Sd</b>	<b>F</b>	<b>p</b>
1500 and below	11	99,91	9,57	1,235	,304
1501-2500	27	101,00	8,16		
2501-3500	24	98,29	7,52		
3501-4500	10	95,00	15,84		
4501 and above	8	103,38	5,07		
<b>Number of siblings</b>	<b>N</b>	<b>x</b>	<b>Sd</b>	<b>F</b>	<b>p</b>
None	4	101,25	3,77	,496	,738
1 sibling	39	100,31	9,59		
2 siblings	24	99,63	8,36		
3 siblings	8	97,38	11,75		

4 siblings and above                      5                      95,00                      11,38

<b>How many hours slept in a day</b>	<b>N</b>	<b>x</b>	<b>Sd</b>	<b>F</b>	<b>p</b>
6 hours	21	99,90	9,12		
7 hours	29	100,52	7,74		
8 hours	18	98,89	11,33	,321	,863
9 hours	7	98,57	11,73		
10 hours and above	5	95,80	9,18		

As shown in Table 4 there was not any statistical change in students' attention values with respect to factors such as age, monthly income level of family, number of siblings, how many hours slept in a day.

## **DISCUSSION**

Among 40 students of the age group 10-12 practicing fencing sports in Fencing Branch of Göztepe Sports Club, Kartal et al., (2016) conducted an analysis to find the effects of sports on participants' attention level. In this study researchers administered Bourdon Attention Test to students in experimental and control groups in order to measure their attention levels. In this study they concluded that students who practiced fencing sports scored higher attention values compared to students not-practicing the sports. They also reported that fencing sports would render remarkable contribution to improve attention capacity of students with distraction issues.

Tunç (2013) conducted a study among 60 students of 14-15 age group studying in Mehmet Halil İbrahim Hekimoğlu Trade Vocational School in Selçuklu district of Konya city. The researcher administered Bourdon Attention Test to students in experimental and control groups in order to measure the effects of golf sports on their attention level and concluded that golf would render remarkable contribution to improve attention capacity of students Asan (2011) administered Bourdon (1955). Attention Test to a sampling group formed of 80 students in 9-13 age group to analyze the effects of table-tennis sports on students' attention level. The researcher concluded that table-tennis exercise had a positive effect in improving children's attention levels and among children in an age group of 9-13, table-tennis exercises positively changed their attention levels.

Akandere et al. (2010) conducted a study among 80 students of 9-13 age-group in Marmaris Bayır village Primary School and investigated the effects of an educational-games program on students' distraction. To collect data, researchers administered Bourdon (1955) Attention Test and concluded that students who participated in educational-games program achieved higher attention scores and they also reported that educational-games program significantly contributed to the attention development among students.

Özdemir (1990) conducted a research among university students of 17-23 age-group practicing and not-practicing sports to measure their attention levels and identified that the group which practiced sports achieved higher scores than the group not-practicing sports.

Adsız (2010) in his research administered Bourdon Attention Test to 30 students of primary education 4<sup>th</sup> and 5<sup>th</sup> grades. The study aimed to determine attention levels of students regularly practicing and not-practicing sports. It was then concluded that students regularly practicing sports achieved higher attention levels than non-practitioners and sports generically rendered a positive effect on attention development.

Via administering Benton Visual Memory Test, Yurdakul et al. (2012) conducted a study among 146 primary education students of age 8 studying in Manisa city in order to analyze the effects of 12-week mobility educational program on the attention and memory development. They concluded at the end of this research that a tailor-made mobility educational program positively affected memory and attention development of 8-year old primary school students.

Aydın (2017) examined 263 Boys and 164 Girls aged 12-18 who either practiced or not- practiced sports. In order to measure attention level of 427 students in sum, the researcher administered Bourdon Attention Test which indicated a significant difference in the attention level of students ( $P < 0,05$ ). In contrast the researcher suggested that with respect to factors such as age, educational level of parents, having a room of his/her own there was not a significant difference in their attention level ( $P > 0,05$ ). Thus in the study that aimed to measure the attention levels of 12-18 age group students practicing or not-practicing sports, it surfaced that attention levels of the group practicing were comparatively higher than the group not-practicing sports, which led to concluding that regular exercise positively affected attention level.

As seen above, a vast majority of studies employed Bourdon Attention Test (Adsız 2010, Akandere et al., 2010, Asan 2011, Tunç 2013, Kartal et al., 2016, Aydın 2017). In the same vein we utilized this test in our study proving the reliability and validity of the test which we harnessed as our measurement tool.

An analysis of the findings of the studies above signal that compared to non-practitioners, students who practiced sports scored higher attention levels (Özdemir 1990, Adsız 2010, Akandere et al., 2010, Asan 2011, Yurdakul et al., 2012, Tunç 2013, Kartal et al., 2016, Aydın 2017). Our study concluded that compared to non-practitioners, students who practiced sports scored higher attention levels (Table 1) and there was a statistically significant difference in between ( $P < 0,05$ ). Above-listed studies are on the same page with our research. In our study gender-based analyses manifested that girls practicing sports had higher attention levels than girls not-practicing sports (Table 2) and the difference in between was statistically significant ( $P < 0,05$ ). It also surfaced that compared to boys not-practicing sports, boys who practiced sports achieved higher attention levels (Table 2) and the difference in between was statistically significant ( $P < 0,05$ ).

Aydın (2017) suggested that with respect to factors such as age, educational level of parents, having a room of his/her own there was not a significant difference in the attention level of analyzed students ( $P > 0,05$ ). Similarly, in our study as seen in Table 3 and Table 4, factors such as having a divorced or united family, a room of his/her own, a history of disease, age, monthly income level of family, number of siblings, how many hours slept in a day were analyzed factors to measure students' attention level and not a statistically significant difference was measured between groups ( $P > 0,05$ ). These findings are compatible with the results of the research above.

## **Discussion And Conclusion**

This study aimed to analyze the effects of table-tennis exercises among children in 14-18 age-group on their distraction levels and it was concluded that table-tennis exercise positively impacted distraction. In light of these findings it is suggested that by motivating children with attention problems to practice table-tennis sports it is feasible to upgrade their attention problems to a positive level.

In relevant literature, an abundance of studies exist to prove the positive effect of sports on distraction. Dewey et al. (1989) reported that attention is a main component of data-processing system and due to its failure to process a whole set of data in one session, humans possessed a limited capacity system. They also emphasized that attention was essential to ensure feeding the limited-capacity processor with inputs. In sport activities, attention factor is not merely bound to domains related to sports; once children applies this feature to all stages of life there is a corresponding rise in their success and self-efficacy levels alike. Abernethy (1993) argued that distraction and confusion of an athlete could negatively impact concentration and that impact would prevent the athlete to perform maximally. Hence the researcher underpinned the gravity of a continuous share between attention and selective attention.

In our research and relevant studies dwelling on the same issue, it surfaced that sports positively affected distraction level. Accordingly it is suggested that motivating children to sport activities would augment the academic success of our children. As seen, there is a limited number of studies on this issue. Hence it is of high importance to conduct more comprehensive studies via administering a myriad of tests.

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