



Research Paper

Effects of table tennis sports on attention in secondary school students

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ABSTRACT

The present study aimed to analyze the effects of table-tennis on the distraction of secondary-education students practicing and not-practicing table-tennis sports. Research sample consisted of 80 students (n=80) currently studying in AdilKaraağaç 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 5.53 ± 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 the control group. Bourdon Attention Test (1) was administered to students in both control and experimental groups. In the analysis of data; SPSS 20I statistical package program was employed. $p < 0.05$ was the accepted significance level for the conducted tests. It was found 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 as compared with the group not-practicing the sports ($P < 0,05$). In the research groups, an analysis with respect to gender showed 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 between ($P < 0.05$) the analyzed groups. As regard 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 no statistically significant difference between the groups ($P > 0.05$). The results of the present study showed 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.

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INTRODUCTION

Currently one of the factors negatively affecting students' success is distraction. Rapid technological changes, such as computer games and visual media, have grabbed students' attention which results in the fact that the main duties such as sports, painting, music and academic career have been 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 (Banich, 1997; Kolb and Whishaw, 1996). Another definition of attention is that it is

a phenomenon that can make it easy to react against a certain condition or stimulus owing 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 once since she/he has a limited perception capacity, hence stimulants are selectively received (Bozan and Yasin, 2012).

Sports have 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 and 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 and Feltz, 1987). Provided that an athlete loses his/her attention and demonstrates a poor performance, it is important to continuously share the attention (Çağlar and Korunç 2006). That is to say, focusing on multiple points would significantly lower one's performance in a sports activity (Magill and Anderson, 2007). 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, she/he could then guarantee success (Tavacioğlu, 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 and 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 fact, the perception that we focus on moves towards our consciousness whilst the remaining stimulants are unconsciously perceived (Tavacioğlu, 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 (Güven 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).

MATERIALS AND METHODS

Sampling in this study consists of 80 students (n=80) within the age range of 14-18 currently studying in AdilKaraağaç Anatolian Technical Vocational High School in Selçuklu district of Konya city. Mean age of students included in the study was 15.53 ± 0.80 . A total of 40 students (n=40) who regularly practiced table-tennis sports formed the experimental group while 40 students (n=40) not-practicing the sports constituted the control group. Bourdon Attention Test was administered to students in both control and experimental groups.

Developed by Bourdon, this test aimed to measure the attention levels of individuals. Prior to administering the test, it was 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.

Table 1: Students' participation in sports activity and changes in their attention level.

Sports activity	n	x	Sd	T	p
Students Practicing sports	40	103.13	6.97	3.745	0.000 *
Students Not-practicing sports	40	95.93	9.96		
Total	80	99.53	9.28		

* Intergroup significant difference (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	0.047 *
Girls Not-practicing sports	17	98.24	8.56		
Boys Practicing sports	25	103.04	7.76	3.236	0.002*
Boys Not-practicing sports	23	94.22	10.75		

*Intergroup significant difference (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.

Parents	n	x	Sd	t	P
United	68	99.56	8.92		
Divorced	12	99.33	11.55	0.064	0.939

Having a room of his/her own	n	x	Sd	t	P
Yes	59	99.86	9.70		
No	21	98.57	8.12	0.546	0.555

Having a history of disease	n	x	Sd	t	P
Yes	17	99.82	8.83		
No	63	99.44	9.46	0.149	0.878

The number of all letters was known. Bourdon Attention Test is administered to individuals from age 9 to 20. In its test questionnaire, there were 150 (a) letters, 75 (g) letters, 50 (b) letters and 25 (d) letters. Students were asked to complete each part in 5 min and the instruction was; "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 was conducted by counting the underlined letters.

Statistical analysis

In the analysis of obtained data, SPSS 20i statistical package program was employed. The mean±standard deviation, percentage and frequency values of data were harnessed. Variables were tested via Shapiro Wilkand 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<0.05was the accepted level of significance for the tests.

FINDINGS

As shown in **Table 1**, the mean value of students practicing sports was (103.13±6.97) higher than the mean value of students not-practicing sports (95.93±9.96) and also the difference in between was statistically significant (p<0.05).

As shown in **Table 2**, the mean value of the attention test of girls practicing sports (103.27±5.65) was higher than the value of girls not-practicing sports (98.24±8.56) and the difference in between was statistically significant (p<0.05). Mean value (103.04±7.76) of the boys practicing sports was higher than the mean value of boys not-practicing sports (94.22±10.75) and the difference in between was statistically significant (p<0.05).

As shown in **Table 3**, there was no statistical change in students' attention values with respect to factors such as

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.

Age	N	x	Sd	F	p
Age 14	6	104.17	7.03		
Age 15	35	96.86	8.91	1.977	0.125
Age 16	30	101.03	10.58		
Age 17	9	101.78	3.87		

Monthly income level of family	N	x	Sd	F	p
1500 and below	11	99.91	9.57		
1501-2500	27	101.00	8.16		
2501-3500	24	98.29	7.52	1.235	0.304
3501-4500	10	95.00	15.84		
4501 and above	8	103.38	5.07		

Number of siblings	N	x	Sd	F	p
None	4	101.25	3.77		
1 sibling	39	100.31	9.59		
2 siblings	24	99.63	8.36	0.496	0.738
3 siblings	8	97.38	11.75		
4 siblings and above	5	95.00	11.38		

How many hours slept in a day	N	x	Sd	F	p
6 hours	21	99.90	9.12		
7 hours	29	100.52	7.74		
8 hours	18	98.89	11.33	0.321	0.863
9 hours	7	98.57	11.73		
10 hours and above	5	95.80	9.18		

having a divorced or united family, a room of his/her own and a history of disease.

As shown in Table 4 there was no 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 determine the effects of sports on participants' attention level. In the present study, the Bourdon Attention Test was administered to students in experimental and control groups in order to measure their attention levels. Thus it was concluded that students who practiced fencing sports scored higher attention values as compared with students not-practicing the sports. It was 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, 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 Attention Test to a sampling group comprising 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 on 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 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 4th and 5th 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 Manisacity 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. To measure attention level of 427 students, 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 and having a room of his/her own, there was no 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 shown above, a vast majority of studies have employed Bourdon Attention Test (Banich, 1997; Kartal et al., 2016; Asan, 2011; Akandere et al., 2010; Adsız, 2010; Aydın, 2017). As a result, 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 (Banich, 1997; Kartal et al., 2016; Asan, 2011; Akandere et al., 2010; Özdemir, 1990; Adsız, 2010; Yurdakul et al., 2012; Aydın, 2017). Our study concluded that as compared with non-practitioners, students who practiced sports scored higher attention levels (Table 1) and there was a statistically significant difference in between ($P < 0.05$). The above-listed studies

are in line with our research. In the present study, gender-based analyses showed 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 was also found that as compared with 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, and having a room of his/her own, there was no significant difference in the attention level of analyzed students ($P > 0.05$). Similarly, in the present study, as shown in Tables 3 and 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 and how many hours slept in a day were analyzed factors to measure students' attention level and no statistically significant difference was measured between groups ($P > 0.05$). These findings are in line with the results of the research above.

CONCLUSION AND SUGGESTIONS

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 and Brawley (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 et al. (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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