EFFECTS OF DIFFERENT BRANCHES OF SPORTS ON THE MOTOR DEVELOPMENT AND LIFE QUALITY OF CHILDREN

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Abstract

The purpose of the present study is to investigate the effects of different branches of sports on the motor development levels and life quality of children. The population of the study comprised a total of 382 students of the 11-14 age group, who actively perform the sports of handball, volleyball or basketball and do not play any sports. The motor development levels of the children were assessed by using the Short Form Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), and their life quality was assessed by means of Kid-KINDL for the 8-12 age group and Kiddo-KINDL for the 13-16 age group, which are among the general-purpose life quality scales of health-related life quality among children. When the motor development and life quality values of the individuals were examined depending on the branches of sports they perform, statistically significant differences were found between the groups ($p<0.05$). Consequently, the results of the study suggest that various branches of sports affect the motor development and life quality of children. Accordingly, it can be said that playing sports in an active manner produces a positive effect by increasing the motor development and life quality levels of individuals.

Key words*: Motor Development, Life Quality, Sport, Child*

Introduction

The concept of the quality of life has gained importance in recent years, becoming a subject applied on people from all age groups and drawing considerable interest. The United Nations Convention states that children should have the right of having adequate standards of living in terms of their physical, spiritual, moral and social development (Harding, 2001). However, the sedentary lifestyle of our age affects the health of children in a negative way. Especially in developed countries, spending long hours in front of television and computer is a factor increasing obesity and lowering the quality of life (Anderson, Economos & Must, 2008; Leatherdale & Wong, 2008). The early studies conducted on the quality of life among children were mostly investigations on diseases. While the studies were mainly interested in the quality of life of the children with cancer (Goodwin, Boggs & Graham-Pole, 1994) and asthma (Williams et al.,2000), physical (Borges et al., 2014), emotional (Czyzewski, Marriotto, Bartholomew, Le-Compte & Sockrider, 1994) and social (Bradlyn, Harris, Warner, Richey & Zaboy, 1993) aspects were also tried to be included in the subjects of the studies. However, these concepts that are investigated among the subjects of the quality of life are quite inadequate in terms of the investigation of the motor development and the quality of life.

A motor skill is defined as the skill to perform diverse and complex motor movements (fine and gross motor movements) in an organized way (Gísladóttir, Haga & Sigmundsson, 2019). Encouraging physical activity during the childhood period is of great importance in terms of the development of the motor skills (Timmons, Naylor & Pfeiffer, 2007). This is because there is a correlation between the physical activity and the motor development (Livonen *et al*., 2013). Children with inadequate motor skills evade the physical problems they encounter in their daily life, which force them to have a sedentary lifestyle. And the sedentary lifestyle, in turn, may bring along various health problems, directly affecting the quality of life (Okely, Booth, & Patterson, 2001). Although it has been suggested that the progress of the motor development in a healthy way increases the quality of life of the individual (Papavasiliou, 2010), no clear opinion has been suggested concerning to what extent and how physical activity affects the quality of life in children (Chen et al., 2005a). The quality of life is considered to be an important source for adaptation to the world and healthy growth. When the quality of life decreases, it is impossible for children to attain the normal development and to be healthy adults (Riley et al., 2006).

A large number of studies have suggested that the level of the motor skills in children (Aktug, Iri & Top, 2018; Jukic et al. 2019; Top, Kıbrıs & Kargı, 2020) as well as their quality of life, increase depending on the increased physical activity (Tessier et al., 2007; Balboa-Castillo et al., 2011). However, it is not certain which branches of sports

provides more contribution to the motor development and to what extent each branch affects the quality of life. Thus, comparing the motor development levels in various sports branches and their levels of affecting the quality of life among children is of importance. The purpose of the present study is to investigate to what extent different branches of sports affect the motor development of children and their quality of life.

Methods

Sample

A total of 304 students from the 11-14 age group (X=12.38±1.07 years), who had been actively playing handball (Females = 33, Males = 38), volleyball (Females = 47, Males = 23) or basketball (Females = 31, Males = 49) for at least two years and who hasn't been engaged in sports (Females = 35, Males = 48) were included in the study. The motor development levels of the children were assessed by using the Short Form Bruininks-Oseretsky Test of Motor Proficiency (Bruininks & Bruininks, 2005), and their life quality was assessed by means of Kid-KINDL for the 8-12 age group (Eser et al., 2008) and Kiddo-KINDL for the 13-16 age group (Eser et al., 2004), which are among the general-purpose scales of health-related quality of life among children. The quality of life scales were applied individually by means of the face-to-face interview method in a quiet environment. The motor development tests were applied on the children in their usual order by experts of the field. The permission for the present study was obtained by the decision of the Health Sciences Scientific Research and Publications Ethics Council of Usak University dated October 06, 2017, and numbered 2017-67.

Data Collection Tools

Bruininks-Oseretsky Test of Motor Proficiency (BOT-2): The second edition of the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2) has been developed in order to measure the motor functions of the children in the 4-21 age group. It is a reliable test which very commonly used to determine the motor skills of children. The application of the test takes 40 to 60 minutes for each child. The test comprises 8 subtests and 53 items. The subtests are "Fine Motor Precision" (Subtest 1), "Fine Motor Integration" (Subtest 2), "Manual Dexterity" (Subtest 3), "Bilateral Coordination" (Subtest 4), "Balance" (Subtest 5), "Running Speed and Agility" (Subtest 6), "Upper-Limb Coordination" (Subtest 7) and "Strength" (Subtest 8). The total combined motor score is obtained by adding the scores of all items. The short form of the test comprises 14 items (Bruininks & Bruininks, 2005). The short form of the BOT-2 test was employed in the present study.

Scale of Health-Related Quality of Life (KINDL): "Kid-KINDL Scale of Quality of Life for the Children of the 8-12 age group" and "Kiddo-KINDL Scale of Quality of Life for the Adolescents of the 13-16 age group" were used in order to assess the quality of life of the individuals taking part in the study. The Kid-KINDL replied by the children and the Kiddo-KINDL replied by the adolescents comprised 24 items and 6 dimensions. The scale comprises six dimensions, namely the physical well-being, emotional well-being, self-esteem, family, social contacts and school. Each dimension is composed of 4 items. While the scores for the dimensions are calculated individually, a total quality of life score is also obtained as a combination of these six dimensions. The questions in the scale have five options, namely "Never", "Rarely", "Sometimes", "Often" and "All the Time". The replies obtained have been scored in accordance with the questionnaire manual and turned into a base of 100. While the value zero shows the worst quality of life, the value 100 shows the best quality of life (Bullinger, 1994; Ravens-Sieberer & Bullinger, 1998; Eser et al., 2004; Eser et al., 2008).

Data Analysis

As for the statistical analyses, the results have been expressed in mean values and standard deviations, and a significance level of □= 0.05 has been taken into consideration in the comparisons. Windows SPSS IBM statistics software was used in examining the statistical tests. The distribution of the parameters was examined using the Kolmogorov-Smirnov test (n>50). The motor development and quality of life values of the individuals depending on the sports they were engaged in were found by means of the Kruskal-Wallis H test, and the differences between the groups were determined by using the Mann-Whitney U test. The correlation between the values of the motor development and those of the quality of life was assessed by means of the Spearman's correlation.

Results and discussion

Participation in sports is considered as an important way of improving the basic motor skills development of children. In addition to developing the basic motor skills of children, the sports and physical activities can also protect them against the health problems that they may encounter in their later ages (Zahner et al., 2009; Fransen et al., 2012; Vandorpe et al., 2012; D'Hondt et al., 2013).

Table 1. The motor development results of individuals according to branch types

	Groups	N	MeanRank	Sd	X^2	p	SignificantDifferences
Fine Motor Precision	Sedentary	83	140.98	3	18.597	.000*	Volleyball>Sedentary, Volleyball>Handball, Volleyball>Basketball
	Handball	71	155.33				
	Volleyball	70	184.55				
	Basketball	80	133.89				
Fine Motor Integration	Sedentary	83	120.74	3	19.405	.000*	Handball>Sedentary, Volleyball>Sedentary, Basketball>Sedentary
	Handball	71	150.96				
	Volleyball	70	171.85				
	Basketball	80	169.89				
Manual Dexterity	Sedentary	83	131.34	3	22.832	.000*	Handball>Sedentary, Handball>Volleyball, Handball>Basketball
	Handball	71	192.71				
	Volleyball	70	149.71				
	Basketball	80	141.21				
Bilateral Coordination	Sedentary	83	114.16	3	58.958	.000*	Handball>Sedentary, Volleyball>Sedentary, Basketball>Sedentary
	Handball	71	171.54				
	Volleyball	70	163.16				
	Basketball	80	166.06				
Balance	Sedentary	83	143.09	3	10.106	.018*	Handball>Sedentary, Volleyball>Sedentary, Basketball>Sedentary
	Handball	71	157.34				
	Volleyball	70	155.14				
	Basketball	80	155.66				
Runnig Speed and Agility	Sedentary	83	67.43	3	123.477	.000*	Handball>Sedentary, Volleyball>Sedentary, Basketball>Sedentary, Handball>Volleyball, Handball>Basketball
	Handball	71	202.93				
	Volleyball	70	181.78				
	Basketball	80	170.39				
Upper-Limb Coordination	Sedentary	83	136.06	3	18.230	.000*	Handball>Sedentary, Volleyball>Sedentary, Handball>Volleyball, Handball>Basketball
	Handball	71	171.44				
	Volleyball	70	154.89				
	Basketball	80	150.65				
Strength	Sedentary	83	150.23	3	3.898	.273	-
	Handball	71	169.96				
	Volleyball	70	145.60				
	Basketball	80	145.40				
Total Motor Development Score	Sedentary	83	86.90	3	77.907	.000*	Handball>Sedentary, Volleyball>Sedentary, Basketball>Sedentary, Handball>Basketball, Volleyball>Basketball
	Handball	71	199.35				
	Volleyball	70	187.26				
	Basketball	80	148.57				

*P<0.05

When the motor development results were examined depending on the sports branches (Table 1), it was found that the best scores had been obtained by volleyball players in the parameters of fine motor precision and fine motor integration, and the best scores were obtained by the handball players in the parameters of manual dexterity, bilateral coordination, balance, running speed and agility, upper-limb coordination and strength. When the sub-tests were taken into consideration, level differences were found between the sedentary individuals and the ones engaged in sports branches. When the total motor development scores are examined, the best development was found to have been attained by the handball players and volleyball players, while the lowest motor development was found to have been attained by the sedentary individuals. This can be interpreted that sports practiced improve the motor development whatever the branch of the sport is. As a matter of fact, when the previous studies were reviewed, although there are suggestions that physical activity does not affect the motor development (Telford et al., 2013), many studies suggest physical activity improves the motor development (Martinez-Gomez et al., 2012; Morrison et al., 2012; Larouche, Boyer, Tremblay & Longmuir, 2014), which can be deemed important in terms of being in line with the results of the present study. Poitras *et al*. (2016) suggest that participation in physical activity contributes significantly to the motor development of children and children should be directed to do physical activity on a daily basis, and this is of importance in terms of supporting the results of the present study. The motor development level of children is low, and these skills require to be developed. It is of importance that a systematic study investigating the motor development of children and assessing the effectiveness of designed interventions emphasizes that sports have considerable contributions to the motor development (Veldman, Jones & Okely, 2016). Besides ensuring the motor development, it should be remembered that there is a physical development taking place in children, and a development in cognitive and social terms will also take place (Jenni, Chaouch, Caflisch, & Rousson, 2013; Leonard & Hill, 2014). In summary, while a

sedentary lifestyle paves the way for health problems among children at their later ages (Okely, Booth, & Patterson, 2001), participation in sports support their motor development. In this regard, handball and volleyball come to the fore as the sports branches providing the best contribution in terms of motor development. By the promotion of these branches of sports by the schools, families and healthcare institutions, it can be possible to contribute to the motor development of children and to ensure their protection against the diseases they can encounter in their later ages.

Table 2. The quality of life results of individuals according to branch types

	Groups	N	MeanRank	Sd	X^2	p	Significant Differences
Physical Well-being	Sedentary	83	138.04	3	12.507	.006*	Basketball>Sedentary, Volleyball>Handball, Basketball>Handball
	Handball	71	133.44				
	Volleyball	70	162.03				
	Basketball	80	176.08				
Emotional Well-being	Sedentary	83	141.40	3	3.633	.304	-
	Handball	71	146.34				
	Volleyball	70	165.34				
	Basketball	80	158.26				
Self-esteem	Sedentary	83	142.05	3	6.705	.082	-
	Handball	71	148.04				
	Volleyball	70	144.94				
	Basketball	80	173.91				
Family	Sedentary	83	154.17	3	8.104	.044*	Volleyball>Handball, Volleyball>Basketball
	Handball	71	141.94				
	Volleyball	70	174.81				
	Basketball	80	140.63				
Social Contacts	Sedentary	83	154.75	3	.962	.810	-
	Handball	71	143.79				
	Volleyball	70	156.04				
	Basketball	80	154.80				
School	Sedentary	83	136.92	3	7.058	.070	-
	Handball	71	150.70				
	Volleyball	70	149.69				
	Basketball	80	172.72				
Total Quality of Life Score	Sedentary	83	136.81	3	6.849	.077	-
	Handball	71	143.68				
	Volleyball	70	161.33				
	Basketball	80	168.88				

*P<0.05

When the quality of life subtest values were examined depending on different sports branches (Table 2), basketball players were found to have a statistically significantly higher score in the parameter of physical well-being, and volleyball players were found to have a statistically significantly higher score in the parameter of family. Although no statistically significant differences were found in other subtests, it can be said that sports improves the quality of life when it is taken into consideration that the children engaged in sports had higher scores both in the other subtests and in terms of their total quality of life.

Table 3. The relationship between motor development and quality of life values of individuals

	N		Sedentary TMPS	Handball TMPS	Volleyball TMPS	Basketball TMPS
Sedentary TQLS	83	r	-.065			
		p	.561			
Handball TQLS	71	r		-.092		
		p		.447		
Volleyball TQLS	70	r			.029	
		p			.810	
BasketballTQLS	80	r				.190
		p				.091

TQLS: Total Quality of LifeScore, **TMPS**: Total Motor development Score

When the correlation between the motor development and the quality of life was examined (Table 3), no statistically significant difference was found between the motor development levels and the quality of life of the sedentary children and the children engaged in sports. In a study conducted on 2353 children with an average age of 12.7, the physical activities carried out for long periods was suggested to have increased the health-related quality of life (Gopinath, Hardy, Baur, Burlutsky & Mitchell, 2012). The fact that another study conducted on 3421 children (Wu, Ohinmaa & Veugelers, 2012) suggested that physical activity can be beneficial in terms of improving the quality of life, and that another study carried out on similar age groups found significant correlations between the physical activity and the quality of life (Lacy et al., 2012; Salvini et al., 2017), are in line with the results of the present study. A study conducted on 7794 children (3869 males and 3925 females) in the 9-10 age group with a follow-up period of 3 years found differences between the physically active children and the sedentary ones in terms of their quality of life (Chen, Sekine, Hamanishi, Yamagami & Kagamimori, 2005b). In another study carried out on 1409 children of the 11-13 age group, the quality of life of the physically active children was found to be better (Sánchez-López et al., 2009). A study investigating the injuries and the quality of life of athletes suggested that the handball players had higher quality of life compared to that of gymnasts and ballet dancers (Schmidt, Pedersen, Junge, Engelbert & Juul-Kristensen, 2017). The results of all these studies can be deemed of importance in terms that they support the results of the present study.

Conclusion

Consequently, the results suggest that taking part in sports activities improves the motor skills development and the quality of life in the children of the 11-14 age group. Especially the high-intensity exercises with a long duration seem to be more effective compared to the low-intensity exercises. The findings obtained in the present study underline the importance of exercise in terms of promoting health among children. Further studies by which the types of the sports branches and the intensity and duration of the workouts can be determined may help in obtaining more accurate information about the motor skills development and the quality of life among children. Thus, there is a need for further studies in order to determine the correlations between the sports branches and the motor skills development and the indicators of the quality of life in a more accurate way.

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