



Perceived constraints and facilitators of participation in physical activity by individuals with autism spectrum disorders

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Abstract

Introduction. The purpose of this study is to examine the nature and context of parent perspectives of physical activity for their children with autism spectrum disorders (ASD). **Methods.** In the study, one of the qualitative research methods, semi-structured interview technique was used as the research design phenomenology method. In addition to demographic information form, participants were asked about the factors that facilitate or constraints their children's participation in physical activity and the benefits of physical activity. Criterion sampling, one of the purposive sampling methods, was used in the study. The study group consisted of 11 parents whose ages ranged from 37 to 55 years ($M_{age} = 44.09$, $SD = 6.59$) and children participated to physical activity rehabilitation program which was carried out by a special education and rehabilitation center. Thematic analysis method was used for data analysis. **Results.** Three themes being constraints in physical activity, facilitators in physical activity and benefits of physical activity were reported. In the study, most frequently reported constraints were intrapersonal and the most commonly reported facilitator was also intrapersonal. Parents' opinions suggest that interpersonal factors and structural factors are important for special education students with ASD to continue their participation in physical activity. **Conclusion.** As a result, it is seen that the parents of individuals with ASD encounter some constraints in directing their children to physical activity, however due to the benefits obtained despite these constraints, their children continue to participate in physical activity.

Keywords: autism spectrum disorder, constraints, facilitators, physical activity

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INTRODUCTION

The number of children diagnosed with ASD has been dramatically increasing in the world. According to the data of Centers for Disease Control Prevention [1]. Autism Spectrum Disorder (ASD) is seen in one of every 150 children over the age of eight in 2000 and in one of every 88 children in 2008, and ASD was seen in one of every 59 children in 2014. The number of individuals with ASD in the 0-18 age group is around 352.000. In addition ASD prevalence in boys is 4 times more common. Boyd and Shaw [2]. stated that the ASD is a neurological developmental disorder characterized by inadequacies in mutual social communication and interaction; repetitive, limited and stereotype behaviors, activities, and interests and which emerges before the age of three and which lasts throughout one's lifetime.

Studies in Europe, Asia, and North America have showed people with ASD with an average prevalence of between 1% and 2% [3-5]. Although there is no definite data in Turkey, it is estimated to be around 1 million individuals with ASD when it is proportioned to the population of the country. The prevalence of childhood obesity in children with ASD population has also become significant. Curtin et al. [6]. stated that for children with ASD 2-19 years of age, the overall prevalence of at risk for overweight was 35.7% and overweight prevalence was 19%. Another study shows children with ASD are at risk for overweight and obesity [7]. Obesity is especially prevalent among children with ASD. Both unhealthy eating habits and lack of physical activity are major factors for this problems. Physical activity plays an important role in preventing obesity in childhood. This prevalence should be taken into consideration in order to minimize the health problems of children with ASD. Physical activity can improve cognitive function, psychological health, attention and has been linked with providing children with opportunities to interact in appropriate social settings [8]. Despite the numerous benefits of physical activity, lack of attention has been given to the physical activity behaviors of children with ASD [8]. Children with ASD not only are physically inactive during childhood but also they become even less active during adolescence [10-12]. Despite a lack of conclusive research results, it is reasonable for us to assume that the general mental and physical health benefits of physical activity would also extend to children with ASD [9, 13]. A large number of factors related to their individual characteristics might explain why they are physically inactive [14]. Although only a few studies have documented the physical activity constraints that these children and their parents experience [10,11,15], even fewer studies have systematically examined which factors constraints and facilitates participating in physical activity [14, 17, 18]. Parental support, intent and perceptions with regards to physical activity play an important role in the development of the health-related behaviors of children with ASD [17]. Participation of individuals with ASD in physical activity is seen as a need for their physical and psychosocial health. The research aims to raise awareness about the experiences of individuals with ASD while participating in physical activities from the perspective of parents and to lead to the increase in physical activities and studies conducted for individuals with ASD.

The leisure facilitators proposed by Raymore [19] and the hierarchical leisure constraints theory developed by Crawford and Godbey [20] contributed to the theoretical framework of the research. Constraints "are the factors that assumed by researchers and perceived or experienced by individuals to limit the formation of leisure preferences and to inhibit or prohibit participation in leisure activities" [21]. When the studies focusing on leisure constraints are examined, various theoretical models have been proposed. Hierarchical Leisure Constraints Theory is the most popular of these theories [22]. The three dimensions which are intrapersonal, interpersonal, and structural constraints are seen as the basis for explaining leisure constraints.

Considering the preference of participating or not participating in leisure activities in terms of only factors constraining the participation is a very restraining perception and facilitators as much as constraints must be considered to explain the participation/non-participation status [19]. Individuals can develop some negotiation strategies to overcome these constraints to their participation to leisure activities. Here, the importance of factors facilitating participation in leisure time activities emerges [23]. Raymore [19]. proposed a model that includes both facilitators and constraints to the basic model proposed by Crawford et al. [22]. This model emphasizes that the individual and his/her social roles should be interpreted in relation to wider environmental forces. Factors facilitating participation include structural, interpersonal and personal facilitators as well as in leisure constraints [22]. If we

address leisure constraints and leisure facilitators together, structural constraints and facilitators are related to socio-cultural beliefs that determine appropriate behavior patterns for community members. Interpersonal constraints and facilitators include incentives (encouragement) from family members, colleagues, friends, peers, or those closest to the individual. Intrapersonal constraints and facilitators include not only personality traits and factors related to the personal past that draw people to a particular activity, but also the necessary physical and mental skills to enable them to participate in this activity.

Obrusnikova and Miccinello [16] stated that individuals with ASD faced many constraints to participate in physical activities but that participation was facilitated by various factors such as enjoying physical activity, feeling successful, making friends, parents supporting physical activities, and planning physical activity programs specially for individuals with ASD.

Therefore the purpose of this study is to examine the nature and context of parent perspectives of physical activity for their children with ASD. Two research questions guided this research: (1) According to the opinions of the parents, what are the benefits and disadvantages of their children's participating in physical activity? and (2) According to the opinions of parents, which factors constraints and facilitates their children participation to physical activity? Using the leisure facilitators and hierarchical leisure constraints theory in the study will help us understand many factors associated with physical activity. Understanding these factors will help guide sensitive assessments and effectively overcome constraints to physical activity and prevent inactivity in children with ASD.

METHODS

Model of the Research

In the study, semi-structured interview technique, which is one of the qualitative research methods, was used since it was thought that the experiences of parents of individuals with ASD who participated in physical activity could be reached more deeply through interviews. Phenomenology method was used as research design. Phenomenology, according to Patton [24] refers to the study of how people define phenomena and perceive them through their senses.

Participants

The participants of the study consisted of 11 parents whose age ranged from 37 to 55 years ($M_{age}=44.09$, $SD=6.59$), whose children regularly participated in the physical activity rehabilitation program carried out by a Special Education and Rehabilitation Center in Ankara (see Table 1). The names mentioned in the study are anonymous. Criterion sampling, one of the purposive sampling methods, was used in the study. Participation criteria for parents are; a) being a biological parent b) parent who spent the most time with the child with ASD c) living in the Ankara. Parents who participated in the study often accompany their children to the place of education. This position of the participants shows that they had intense experiences with their children. In addition, when determining the parents involved in the study, attention was paid whether the child with ASD meets the following criteria: a) being between the ages of 7 and 16 years, (b) not being diagnosed with an orthopedic impairment c) being diagnosed with ASD and benefiting from educational services.

Procedures

In line with the purpose and the theoretical framework of the research, two main questions were directed to the families about the personal information as well as two questions to determine the reasons of facilitating or constraining their children's participation in physical activity and two questions such as "what are the benefits and disadvantages of the participation of their children in physical activity?" were asked. Interview questions were designed using the literature review (13,15,16). Furthermore, eight sub questions were asked about the facilitators and social earnings that affect the participation in physical activity according to the parents. If the answers given by the parents in the questions asked during the interviews were not relevant, short, or could not be determined exactly, similar questions were re-asked in a way that the parents would understand. Then, they were evaluated by three academicians from Ankara University Faculty of Sport Sciences. Experts

evaluated the questions in terms of readability, content validity and technical quality of the qualitative study.

The interviews were held in June and July for one month following the end of the physical activity rehabilitation program. In physical activity rehabilitation program, each individual with ASD has an individual coach. The program was held on Saturdays from 13:00 pm to 17:00 pm every week from October 2017 to June 2018. The first two hours of the program was carried out as movement training and one hour as swimming lesson. After the first two hours of physical activity rehabilitation program, all individuals with ASD participated in swimming with their coaches. The content of physical activity consisted of movements that included play and basic movement skills, which the majority of group work would be enjoyed by individuals with ASD. There was 20 minutes break at the end of each lesson. The pool program was also planned for individuals with ASD to learn to enjoy swimming. The swimming lesson consisted of approximately 45 minutes. Individuals with ASD who were good at swimming were working in different lanes at higher tempo. But the vast majority of the group, together and implemented low-tempo programs. The aim of the program was to get accustomed to water, enjoyment and make it a habit to come to the pool.

In the physical activity program, individuals with ASD with the same or near age worked together in group studies. In the individual programs, similar programs prepared for their needs were implemented. The gymnasium in which the program is carried out has been designed according to the age difference of individuals with ASD. Those in the older age group were separated into a different area of the gym, while those in the younger age group were separated into a different area. Because the contents of the physical activity programs of both groups were different. In addition, it was aimed to take precaution to the problems that may be encountered.

In order to understand the general motor skills of ASD individuals participating in the physical activity rehabilitation program, a general ability test was applied to all participants in the first week of program. The tests were checked in the following weeks and the programs were modified by expert coaches every week according to the development or deficiencies of individuals with ASD. Parents that were predetermined to participate in the interviews were contacted by telephone and the place and time of the meeting were arranged. The interviews lasted approximately 35 minutes. Before the interview, the participants were informed about the aims of the study by the researcher in an enlightening manner and they were asked to sign the informed consent form with their permission to participate. Extra attention was paid to comply with the principle of confidentiality during the collection and storage of all personal information. In the process of data analysis, the names of individuals were kept confidential and code names were used.

Statistical Analysis

The audio recordings of the interviews were transcribed and analyzed on the computer. Thematic analysis method was used for data analysis. The thematic analysis put forward by Braun and Clarke [25]. was carried out in six stages including the researcher's intimacy with the data, the creation of initial codes, the search of themes, the search for potential themes, the naming of themes and the generation of the report. Data were started to analyze by two researchers during the data collection phase. After the eleventh interview, data saturation began to emerge [26]. Therefore, it was accepted that interviewing with 11 parents was sufficient. Inter coder reliability developed by Miles and Huberman [27]. was used for reliability analysis in order to ensure the reliability of the data obtained. For inter coder reliability, "reliability = number of agreements (same coding) / total codes (agreements plus disagreements)" formula was used. According to this formula, reliability being above 80 percent is an indication that reliability is achieved [28]. The data for the reliability analysis were presented to two experts from Department of Sports Management, Faculty of Sport Sciences, Ankara University and the agreement was 91%. Reliability in qualitative research can be evaluated with the consistency of the results obtained with the collected data [29]. Internal validity can be ensured through the audit technique performed with detailed explanation of how the research is conducted and how the data are analyzed, and with strategies such as triangulation, expert examination, the position of the researcher as well as reliability. In all of these qualitative researches, the validity and reliability of the research was achieved through credibility strategies.

Table 1. Descriptive characteristics of special education students with ASD and their parents

	Parents				Individuals with ASD						
	Gender	Age	Occupation	Education	Gender	Age	Education	Height (cm)	Weight (kg)	Duration of PA Participation	Favorite Activity
Par 1	F	39	Assistant	Bachelor's Degree	M	9	Preschool	137	30	1 Year	Games
Par 2	F	55	Retired	Bachelor's Degree	M	14	SEVS	180	92	5 Years	Walking
Par 3	F	55	Faculty Member	Bachelor's Degree	M	16	SEVS	178	79	10 Years	Basketball
Par 4	F	46	Banker	High School	F	14	SEVS	160	52	9 Years	Games
Par 5	F	46	Engineer	Bachelor's Degree	M	15	Middle School	169	63	7 Years	Skating
Par 6	F	38	Officer	Bachelor's Degree	F	8	Preschool	130	25	2 Years	Swimming
Par 7	M	37	Officer	Bachelor's Degree	M	8	Kindergarten	135	28	7 Months	Games
Par 8	F	41	Engineer	Bachelor's Degree	M	10	Primary School	140	33	4.5 Years	Swimming
Par 9	F	39	Archaeologist	Bachelor's Degree	M	7	Kindergarten	129	23	7 Months	Swimming
Par 10	F	49	Housewife	High School	M	12	High School	160	67	7 Years	Table Tennis
Par 11	F	40	Officer	Bachelor's Degree	M	14	SEVS	158	53	9 Years	Cycling

F- Female, M – Male, SEVS: Special Education Vocational School

RESULTS

The leisure facilitators proposed by Raymore [19] and the hierarchical leisure constraints theory developed by Crawford and Godbey [20] contributed to the theoretical framework of the research. These models were used in the study because the movement education program in which special education students with ASD is a therapeutic recreation activity. Data obtained from the participants were evaluated in three categories: intrapersonal, interpersonal, and structural factors.

Constraints in Physical Activity

As a result of interviews and analyzes conducted with participants on the theme of constraints, three main themes were created as intrapersonal, interpersonal and structural (Table 2). Intrapersonal constraints have emerged as health problems, lack of coordination and lack of motivation (see Table 2).

For example, Par8 (age 41) and Par2 (age 55) stated the constraints that her child is experiencing during the participation in physical activity as follows:

"My child's participation in physical activity and other activities is limited by various bowel and stomach problems besides her congenital illness (ASD). One day she suffers from digestion, and another day she has reflux, which makes it almost impossible for her to participate in an activity. We still try to participate, but most days we can't participate"

"My son is keen on eating and drinking. He's always gaining weight, we can say that he's fat. Before physical activity program, he was not very active, he was very heavy and slow. Luckily he participated in this program and spent at least one semester moving. At the end of the program I am very afraid that he will be in the same mood again."

Table 2. Interpersonal, Interpersonal and Structural Constraints Listed by the Participants

Intrapersonal Constraints												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
health problems	7	-	+	-	+	-	+	+	+	-	+	+
lacking in coordination	8	+	+	-	+	-	+	+	-	+	+	+
lack of motivation	9	+	+	+	+	-	+	+	+	+	+	-
Interpersonal Constraints												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
Inadequate social skills	10	+	+	+	+	-	+	+	+	+	+	+
lack of friends	8	+	+	-	+	-	+	+	+	-	+	+
exclusion	5	+	-	-	-	-	+	-	+	+	-	+
other families' negative opinions	3	-	-	-	-	-	+	-	+	-	-	+
Structural Constraints												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
lack of information about PA	7	+	+	-	+	-	+	+	-	+	+	-
financial difficulties	6	+	-	+	+	-	+	+	-	+	-	-
lack of time	7	+	-	-	-	+	+	+	-	+	+	+
lack of center	2	+	-	-	-	-	-	-	-	-	-	+
access to the center	2	+	-	-	-	-	-	-	-	-	-	+
inadequacy of trainers	3	-	-	-	+	-	-	-	+	-	-	+

"+": If parents mentioned. "-": If parents didn't mention.

Table 3. Interpersonal, Interpersonal and Structural Facilitators Listed by the Participants

Intrapersonal Facilitators												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
taking pleasure	9	+	-	+	+	+	+	+	+	+	-	+
making progress	11	+	+	+	+	+	+	+	+	+	+	+
feeling peaceful	8	+	+	+	-	-	+	+	+	+	+	-
feeling happy	8	+	+	+	-	-	+	+	+	+	+	-
decrease in shyness	4	+	-	-	-	-	+	+	-	+	-	-
decrease in aggressive behavior	6	-	+	+	-	+	-	-	+	-	+	+
Interpersonal Facilitators												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
circle of friends	8	+	-	+	-	+	+	+	+	+	-	+
social bonding	8	+	-	+	-	+	+	+	+	+	-	+
sharing	4	+	-	-	-	+	+	-	+	-	-	-
adaptation to social rules	5	+	-	-	-	-	+	+	+	+	-	-
making friends	6	+	-	-	-	+	+	-	+	+	-	+
Structural Facilitators												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
ideal space for PA	7	+	+	-	+	-	+	+	-	+	+	-
opportunity of living in metropolitan	8	+	+	-	+	-	+	+	+	+	+	-
financial competence	6	+	-	+	+	-	-	+	+	-	-	+
interest of trainers	4	-	+	-	-	-	-	-	+	-	+	+
benefits of sport	11	+	+	+	+	+	+	+	+	+	+	+

"+": If parents mentioned. "-": If parents didn't mention.

In the theme of interpersonal constraints, inadequate social skills, lack of friends, exclusion and other families' negative opinions their children about disabled individuals have emerged as interpersonal constraints (see Table 2). Parents stated the constraints as follows: "My child has health problems and we have problems in accessing the facilities. But most importantly, I think that in physical activity environments, the parents of healthy children should inform their children that 'different children share the same world as themselves and that they are no different from them'. Maybe in this way other child doesn't exclude my children and she will not have to do things by herself." Par1 (age 39)

"They take my son's actions strange. Because of this behavior, they exclude my son and they won't let him in. This situation affects my child's participation in activities and games." Par9 (age 39)

"School takes a lot of time, and he is a very overweight and slow child. He has no friends. I wish that he had. We'd better go out and do something together with his friends. But, he cannot participate in any physical activity other than this program." Par10 (age 50):

Structural constraints include lack of information about physical activity programs, financial difficulties, lack of time, access to the center, lack of center, and inadequacy of trainers/coaches (see Table 2).

In this regard, parents stated the constraints experienced as follows: "The greatest constraints to participation in physical activity are the financial burden of participating in a second program and the various health problems my child has". Par7 (age 37)

"There's no time. That's why we usually arrive at the last minute. My son is also a delightful child and a bit lazy, forcing us too. There is a lack of social skills also. Therefore, he continues her program with special help teacher on weekdays. Besides, there is no center around us to go for activity and if it would, we still need extra permission for our use. At the centers, at any moment it is considered that we will create a problem. Because of our different behavior and being a little noisy, the reactions we have received make us abstain from using the centers." Par11 (age 40)

Facilitators in Physical Activity

Facilitating factors provide the greatest role in participation in physical activity as a result of the constraints encountered. The theme of facilitators is considered in three sub-themes: personal facilitators, interpersonal facilitators and structural facilitators (Table 3). The sub-theme of personal facilitators includes the codes of taking pleasure, making progress, feeling peaceful, feeling happy, decrease in shyness, decrease in aggressive behaviors, and increase in dialogue (see Table 3).

In this regard, parents stated own opinion as follows: "The fact that they were involved in group activities with other children in the same environment increased my child's dialogue. Now when we go out and go to a park, he can get along with other children more easily and he can get involved in the games." Par9 (age, 39)

"In this physical activity program, he established friendships with his peers, who acted in similar behavior to his own behavior, without being alienated." Par10 (age 49):

Interpersonal facilitators were identified as a circle of friends, social bonding, sharing, adaptation to social rules and making friends (see Table 3).

In this sub-theme, Par5 (age 46) stated her opinion as follows: "We have seen our child making progress in sport. In addition, sharing information with other families with children with autism made it easier for us to participate in and continue this project."

Structural facilitators consist of codes of consciousness about providing ideal space for physical activity, opportunities of living in metropolitan areas, financial competence, interest of trainers and benefits of sports (see Table 3).

Regarding this sub-theme, Par10 (age 49) expressed her opinion as follows: "We did not encounter such projects in the city where we lived previously. After moving to Ankara (the capital), we can become more aware of and participate in the projects of such institutions and organizations." Other parent Par8 (age, 41) also expressed her opinion as follows: "We are constantly researching the general benefits of sport. What's better for our child, what makes him happy. In addition, the region we live in the woods and sports facilities are nearby. We have experienced and related sports instructors in this area. They have great support. Together with all these factors, we do our best for our child."

Benefits of Physical Activity

According to the theoretical model of the research, as a result of the facilitators used to overcome the constraints, participation in physical activity contributes to individuals with ASD in various aspects. The benefits of participation in physical activity are divided into two sub-themes: physical development and emotional development. In physical development sub-theme, increase in balance, improvement in posture, increase in flexibility, increase in fitness level, weight management (Table 4) and in emotional development sub-theme, increase in response to stimuli, increase in mental health, increase in self-confidence, increase in patience codes were obtained (see Table 4).

Table 4. Physical Development and Emotional Development Listed by the Participants

Physical Development												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
increase in balance	7	+	-	-	-	+	+	+	+	+	+	-
improvement in posture	8	+	+	-	+	+	+	-	+	-	+	+
increase in fitness level	6	-	+	+	+	+	-	-	+	-	+	-
weight management	6	-	+	+	+	+	-	-	+	-	+	-
Emotional Development												
	n	Par 1	Par 2	Par 3	Par 4	Par 5	Par 6	Par 7	Par 8	Par 9	Par 10	Par 11
increase in response to stimuli	5	+	-	-	-	-	+	+	+	+	-	-
increase in mental health	6	+	-	-	+	+	-	-	+	-	+	+
increase in self-confidence	7	+	+	-	-	+	+	+	+	-	-	+
increase in patience	9	+	+	+	-	+	+	-	+	+	+	+

"+": If parents mentioned. "-": If parents didn't mention.

Par3 (age 55) stated: "My son was very active and we had difficulty in controlling him. After starting this project, he keeps his energy for here and after the project he gets tired and sleeps comfortably. As a result of the physical activity held here, he turned to various sports branches and he also does exercise for the rest of the week. He is more confident and now he is spending his free time more efficiently." On the other hand, Par6 (38) stated her opinion about the sub-theme of physical and emotional development as follows: "When my child started physical activity education, he became able to play many sports branches. He started to participate in games and sports events with his friends. His condition improved, his flexibility improved, his posture improved, and most importantly, his confidence increased." Regarding the disadvantages arising from participation in physical activity, the parents did not report any disadvantage.

DISCUSSION

This study is one of the first studies systematically researching the factors effecting the children with ASD in physical activity from the perspective of parents. In the study, it was seen that parents with different personal information had positive opinions about the benefits of physical activity for their children with ASD in general. It is observed that physical activity reduces interpersonal factors such as loneliness and social inadaptability; as a result of these activities conducted with crowded groups, positive results such as increase in dialogue, friendship and decrease in shyness were observed. In the study conducted by García-Villamizar and Dattilo [30], it is concluded that participation in recreation activities reduces the stress of adults with ASD and has a positive effect on quality of life. Eime et al. [31] stated that the health benefits of participation in physical activity were not limited to physical health but also contributed to mental health. Improvements in weight loss, coordination, posture and balance disorders as well as improvements in mental activities such as patience, self-confidence and increased sense of accomplishment were reported in the study. In this respect, the results of the study conducted by Eime et al. [31] also supports the present study. In their meta-analysis study related to the studies analyzing physical activity and individuals with ASD, Lang et al. [32]. stated that physical activity lead to decrease in stereotyped, repetitive movements, aggression,

and off-duty behaviors. Stating that programs for individuals with ASD and regular and specific physical activities should increase and such activities are beneficial for individuals with ASD, these results were in parallel with our research results.

According to the literature, it is stated that individuals with ASD confront with many constraints to participating in physical activities according to their parents [13]. When the constraints reported by the researchers are examined, it is seen that these constraints are classified as intrapersonal, interpersonal and structural. Also researchers, have supported the use of the socio ecological model developed by McLeroy et al. [33]. as constraints to physical activity can be understood in terms of multiple levels of influence. Social-ecological model, including peer and family-level factors (e.g., transportation constraints, time constraints), child-level factors (e.g., poor motor skills, health situation, behavioral problems,) community-level factors (e.g., access to programs, staff and facilities), and public policy and other societal-level factors are the factors that affect physical activity participation [34,35]. Studies conducted show that children with disabilities face more constraints to participating in regular activities at home and in groups [36]. Therefore, it is necessary to analyze the constraining or limiting factors encountered in participating in these activities which are very important for individuals with ASD to maintain a quality life. In the study, parents stated that their children were most often hindered by intrapersonal constraints in the participation of physical activity. These constraints emerged as health problems, lack of motivation, lacking in coordination. Yang et al. [37] state that sleep and gastrointestinal problems are important factors affecting the health of most individuals with ASD. According to Hill et al. [38] the risk of obesity in individuals with ASD is higher compared to the healthy individuals. According to the study, 33.6% of ASDs between the ages of 2-17 are overweight and 18% are obese. In addition to all these factors, lack of coordination is one of the most affecting factors in the research conducted on the individuals with ASD and physical activity. According to Hughes et al. [39] the lack of motor ability suitable for physical activity and low motivation are the main constraints to participating in physical activity activities for individuals with ASD.

As for interpersonal constraints, inadequate social skills, lack of friends, exclusion, and other families' failure to inform their children about disabled individuals have emerged as interpersonal constraints. In the studies conducted, Obrusnikova and Miccinello [16], highlights lack of peers as an important factor in participation in physical activity. As a result of meta-analysis of 16 different studies using the keywords "ASD" and "physical activity, Sowa and Meulenbroek [40] considered the factors such as motor skills deficits, exclusion from society and self-exclusion from the society as important factors in the participation of individuals with ASD. Eaves and Ho [41] stated that individuals with ASD are far from social domains due to lack of social skills, they do not participate in social activities and do not have friends in the study that they conducted to obtain information about the health, physical activity, educational status, social skills and quality of life of young adults with ASD.

Another constraints theme in the study is structural constraints. Structural constraints are the lack of information about physical activity programs, financial problems, lack of time, access to the center, lack of center, inadequacy of trainers / coaches. According to the studies conducted, the fact that it is difficult to reach the centers where physical activities are held [42], parents having limited free time, physical activities being expensive [15] are some of the constraints among others. Aydin and Sarol [43] examined the factors that prevent individuals with ASD from participating in physical activity programs. It was stated that economic difficulties are the most important hindering factors in the participation of individuals with autism in physical activity programs and that state (government) policies are insufficient in terms of participation in physical activity programs that support educational activities in order for individuals with ASD to use their social life potential. Lack of facilities or inadequate centers where physical activities will be performed is also seen as an important structural obstacle for the participation of individuals with ASD in physical activity [44]. In the study, parents stated that intrapersonal facilitators were most effective in their children's participation in physical activity. These facilitators are pleasure, making progress, feeling peaceful and happy, decrease in shyness, decrease in aggressive behaviors and increase in dialogue. When the conducted studies are examined, playing individual/dual sports (e.g., tennis, swimming), playing team sports (e.g., soccer, basketball), involving favorite figures/interests (e.g., star wars), feeling rewarded (e.g., medal, party), feeling refreshed are found to be intrapersonal facilitators [45]. In another study, personal factors

facilitating participation in physical activity are referred to as emphasizing enjoyment of physical activity, using managerial strategies to promote physical activity and maximizing success and achievement in physical activity.

Considering the interpersonal facilitators obtained in the study, they are determined as circle of friends, social bonding, sharing, adaptation to social rules, making friends. When the studies in the literature are examined, the fact that friends, family and siblings are active and support participation in physical activity, housework and having pets are mentioned as factors interpersonal facilitating for physical activity [14]. When physical activity is performed in a group, the other peers in the group support each other [46].

Structural facilitators consist of codes of consciousness about providing ideal space for physical activity, opportunities of living in metropolitan areas, financial capability, interest of physical activity and benefits of sports. In the study of Shields et al. [47] the aim of this systematic review was to investigate the perceived barriers and facilitators to physical activity among children with disability. Facilitators included the child's desire to be active, practicing skills, involvement of peers, family support, accessible facilities, proximity of location, better opportunities, skilled staff and information. In the study conducted by Rosso [48] stated that physical activity enabled socialization in the teenagers with ASD and facilitated creating a positive environment for the social inclusion through physical activities. According to the study of Mattinson et al. [49] money, time, supplies, programs and services, public and private transport are defined as structural facilitators and it supports result of current studies.

CONCLUSION

As a result of the study, it is seen that parents of ASD individuals encounter some constraints in directing their children to physical activity, but despite these constraints, children continue to participate in physical activity by developing some facilitators. The study shows that physical activity plays an important role in the lives of individuals with ASD and the findings obtained from previous studies are in consistent. As a result, it is seen that parents of individuals with ASD encounter some constraints in directing their children to physical activity, but despite these constraints, due to the physical and psychosocial benefits obtained, the children continue to participate in physical activity with the help of facilitators. Individuals with ASD are highly complex, difficult to understand and a growing number of people with disabilities. The creation, implementation and follow-up of physical activity programs for these individuals is a great need. The awareness of the public related to this issue should be raised and special trainers who have knowledge about the subject should be trained. Parents of individuals with ASD should be informed about the benefits of physical activity and appropriate physical activity programs should be developed for ASD patients. In this study, interviews about children with ASD were conducted with their parents. For this reason, it is also revealed that the fact that the parent who takes care of the child in Turkey is usually a mother in our study and only one male participant could be included in the study. This is the main limitation of the research. Further studies should be conducted to increase the participation of individuals with ASD in physical activity by performing various separate or high-numbered studies in different age groups. In this group of children with ASD, children's physical activity was strongly associated with parental physical activity; parent-reported constraints may have had less direct effect. Further studies should examine the importance of parental physical activity among children with ASD.

CONFLICT OF INTEREST

There are no conflicts of interest.

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