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Assessment of expectations and perceptions of sport business customers for service quality: a study of sport business sector in Sivas, Turkey

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Abstract

In this study, it is aimed to evaulate the sport customers' perceptions of the service quality and the sport businesses'performance in Sivas, Turkey and with the gained data to improve some advices for sport businesses to give more effective service quality. The data which is used in this study have been gained from the customers of 10 sport businesses in Sivas, Turkey. SQAS (Service Quality Assessment Scale) instrument, which was developed by Lam et al., (2005), to measure the service quality of Fitness Centers, was used as a means to collect data. The data used in the research were obtained from the customers (n=316) of 10 sport businesses in Sivas province. To find the difference between groups, "irrelevant-modelling t test" and "paired-modelling t test" have been used. The difference between them has been accepted as meaningful if $p<0.05$. When the service expectations according to the gender are compared, it is seen that the females have higher expectation levels in all aspects than the males. When the service perceptions according to the gender are compared, it is seen that the females in all aspects except "physical establishment" have found the service quality more satisfying than the males. The results indicate that the expectations of the customers of sport businesses in Sivas, (Turkey) province are not met completely. All the customers that get service from the sports institutions in the city of Sivas have the satisfaction more than the avarege, but their expectations haven't been fully met. It has been determined that there is a meaningful difference between the expectation and perception scores in the negative direction. It is seen that the aspect that has the lowest expectation level is "undressing room". "Training center", "personnel", "program" and "physical establishment" aspects follow "undressing room" aspect in order.

Keywords: Sport businesses, service quality, perception, expectation

INTRODUCTION

Developments in sports and increasing people's interest over the sports in Turkey as in the World have increased the amount of the sport businesses that serve sport materials and give sport services. That increase naturally causes the competition in sport businesses as every sector. For that reason, sport businesses as other businesses have to meet the customers' expectations even go beyond that expectations to have the competition superiority and continue their existences. The sport businesses that can succeed in doing that may continue their existences.

There have been many international researches in the field of measuring the quality of service in many service sectors. It is possible to see those researches in many service sectors like tourism, medicine, transportation, education, local administration etc. (Eleren et al., 2007). But it is thought that there are not enough researches in the subjects of how the service qualities are perceived by the customers and how much importance is given to it by them.

In this study, it is aimed to evaulate the sport customers' perceptions of the service quality and the sport businesses'performance in Sivas and with the gained data to improve some advices for sport businesses to give more effective service quality. For that aim, the questions below are wanted to be answered;

a. In which level are the customers'expectations of the service quality?
b. In which level are the qualities of service that are perceived by the customers?
c. Are there any differences according to the sexes between the expectations and the perceptions of service qualities?

This study has been seen an important subject of research for the sport businesses in Sivas to give effective services and to continue their existences thanks to it.

Conceptual Framework

Sports Management

Generally the concept of business means the units that produce service or materials and/or sell it and are aimed to earn money by gathering production factors (Mutlu, 2009). In another definition, the concept of businesses is defined as units that change the data taken from the

environment in a particilar condition to the market productions and services and sell those at a particular price existed in the market (Kocel, 2011).

The concept of sport business comes out as a kind of business in which people's needs, aims and expectations about sports are met. In a narrow meaning, it gives information about how the open and closed sports facilities in or out of the settled areas should be established and run. In a wide meaning, it means to plan and apply the sportive services and programs that can be come true by using the environments outside of the facilities like mountains, rivers, lakes, seas, beaches and even the sky (Ekenci and İmamoğlu, 2002).

In this context, sports businesses are defined as the institutions that gives different sport activities and services to shape people's social lives (Ramazanoğlu and Öcalan, 2005) and to meet different sportive needs and wishes (Ekenci and İmamoğlu, 2002). Its aim is to be able to supply productions peculiar to some branches and to serve them to the people who want to use (Ramazanoğlu and Öcalan, 2005).

According to a similar definition, the sport businesses are the institutions that try to meet the customers needs and wishes by putting some kinds of sports equipments into the sport markets (Argan and Katırcı, 2008).

Sports Product

The production means an equipment, a service, a person, a place, an organization, an idea or the mixture of those that are aimed to meet people's needs and wishes and to put into the market to be useful (Argan and Katırcı, 2008).

In this context, a sport product is a material that is produced to meet the needs of the sport customers or a service that is not physical (Argan and Katırcı, 2008).

The goods as the concrete materials that are used to meet people's needs are defined as the touchable products (Mutlu, 2009). Some of the sport products are touchable materials, too (Argan and Katırcı, 2008). Footballs, tennis rackets, sport clothes are some examples of those products.

As to the services as some abstract actions that also meets people's needs but are not concrete, they are defined as the products that are not touchable (Şimşek, 2008). Watching a sportive match, doing sports in the fitness center or in a swimming pool are the examples of those.

Quality of Service

The quality of the service is defined as " the general idea of the customers about a product or a service's superiority or perfection "(Eleren et al., 2007). On the other hand, it defines the quality of service as the difference between the customers'expectations and their perceptions about the quality of the service (Mutlu, 2009).

The customers who are satisfied with the quality of the service will continue to buy the service and as to the unsatisfied customers, they will stop buying the service and probably will talk about their dissatisfaction to their friends (Kotler, 2001). For that reason, businesses need to try to make their customers satisfied with their services.

The sport businesses as the instutitions focused on the satisfaction of the customers have to provide satisfaction for the customers. If the customers are satisfied with the service given in the sport center, they will come again. So the qualities of the products, services and the activities have vital importance fort he sport businesses, as the other businesses do too. For the customers are waiting for their expectatins to be met, not giving that exptected qualities will end up losing customers (Ergin et al., 2010).

For that reason, it is important to determine how the services given are perceived by the customers, in which criteria those are evaluated, which of the quality components are awared and given importance by the customers or what quality componants are paid insufficient attention by the businesses (Ergin et al., 2010).

MATERIALS and METHODS

Model Research

This study has been carried out according to the combing model.

Universe and Sample

The data which is used in this study have been gained from the customers of 10 sport businesses in Sivas. They do business and have trade status. With the permission of those businesses managers, the scale forms have been given out by the researchers giving the necessary explanations to the 400 customers who take services from that businesses and they

have been wanted to fill out those forms. 316 of those scale forms collected have been found usefuland the analyses have been done according to those forms.

Data Collection Tools

In this study , SQAS (Service Quality Assessment Scale) that has been developed by Lam, Zhang and Jensen, (2005) for the aim of assessing the qualities of fitness and health clubs has been used as the data collectiion tools (Lam et al., 2005). SQAS consists of 40 articles and 6 dimensions. Those are dimensions of personnel, programs, undressing rooms, physical properties, exercise facilities and children care. For the dimension of children care hasn't been existed in the sport businesses where the research has been done, it hasn't been used.

For the aim of assessing the articles in the scale, the perceptions and expectations that are in the SERVQUAL Model which has been developed by Parasuraman et al., (1988). According to that model, the quality of the service is the result of the expectations and perceptions. In another Word, the SERVQUAL model bases on the difference between the expected quality and the perceived quality (perception (A) -expectation (B) = the service quality) (Parasuraman et al., 1998).

If A >B, it has high quality, If A = B, it is satisfactory, If A<B, it has low quality (Parasuraman et al., 1998).

Data Collection

In the data obtained, frequence, percentage rate, arithmetic average and standard deviation analyses have been done and the Cronbach Alpha safety coefficient has been measured for inner consistency to be able to determine. In general, to be able to determine the service quality, the differences between the the expectations scores and perception scores have been determined by subtracting one from the other. To find the difference between groups, "irrelevant-modelling t test" and "paired-modelling t test" have been used. The difference between them has been accepted as meaningful if $p<0.05$.

RESULTS

Table 1. The dispersion of people according to their demographic properties

Gender	F	%	Age	F	%
Female	116	36.7	17 years old and under	11	3,5
Male	200	63.3	18-30 years old	241	76,3
Total	**316**	**100**	31years old and over	64	20,2
			Total	**316**	**100**
B.M.I.	**F**	**%**	**Occupation**	**F**	**%**
Thin	14	4.4	Public	47	14.9
Normal Weight	188	59.5	Private sector	56	17.7
Overweight	91	28.8	House wife	13	4.1
Obese	23	7.3	Student	200	63.3
Total	**316**	**100**	**Total**	**316**	**100**

Education	**F**	**%**
Primary education	10	3.2
High School	49	15.5
University	236	74.7
Graduate	21	6.6
Total	**316**	**100**

In table-1, the dispersion of the research participants has been given according to their demographic properties. According to it, it is seen that an important part of the participants consists of women (36.7%), 76.3% of them is between 18-30 years old and more than one – third of them is overweight and obese. It is also understood that more than three-fourth (81.3%) of the participants are college graduate and 63.3 % of them are students (Table 1).

Table 2. The dispersion of members' participations to the sport centers

The Fitness Center Type	**F**	**%**	**Participation Period**	**F**	**%**
Fitness Center	221	69.9	Less than 1 Year	119	63
Pool	54	17.1	1 Year	53	16.8
Tennis Court	41	13.0	2 Years	20	6.3
Total	**316**	**100**	3 Years	15	4.7
			4 Years and Over	29	9.2
			Total	**316**	**100**

Fitness Center Weekly Arrival Frequency	F	%	Fitness Center Arrival Time	F	%
1-2 Times	79	25	$06^{\underline{00}}$-$10^{\underline{00}}$	19	6
3-4 Times	151	47.8	$10^{\underline{00}}$-$14^{\underline{00}}$	61	19.3
5-6 Times	77	24.4	$14^{\underline{00}}$-$18^{\underline{00}}$	105	33.2
7 and above	9	2.8	$18^{\underline{00}}$-$24^{\underline{00}}$	131	41.5
Total	**316**	**100**	**Total**	**316**	**100**

Benefiting from the fitness center Purpose	F	%
Recreation Activity	33	10.4
Maintain a Healthy Life	134	42.4
Recovery from Weight	42	13.3
Having a fit body	87	27.5
Social Relations Development	20	6.3
Total	**316**	**100**

In the table 2, the dispersions of the participants'going to the sports center who are in the study, have been given. According to it, it is seen that most of the participants, (69.9%) have gone to those centers for one year or less than it, almost half of them (47.8%) g oto the sport centers 3-4 times a week, nearly one-fourth of them use the centers in the afternoosn and in the evening. When the using aims of the sport centers are examined, it is understood that the first aim of an important parts of the participants (42.4%) is leading a healthy life and the first aim of the 27.5% parts of them is having fit bodies (Table 2)

Table 3. The values of perceptions and expectations about the service quality

Material	Perception		Expectation				
	X	SS	X	SS	P-E	t	P
Personnel	**3.97**	**0.90**	**4.53**	**0.45**	**-0.56**	**10.426**	**0.00***
1. Possession of required knowledge/skills	4.05	1.08	4.77	0.53	**-0.71**	11.221	0.00*
2. Neatness and dress	4.16	0.96	4.49	0.74	**-0.34**	5.274	0.00*
3. Willingness to help	4.05	1.08	4.63	0.62	-0.58	8.955	0.00*
4. Patience	3.98	1.08	4.55	0.65	-0.58	8.612	0.00*
5. Communication with members	4.00	1.07	4.54	0.60	-0.55	8.976	0.00*
6. Responsiveness to complaints	3.93	1.09	4.65	0.62	**-0.72**	10.260	0.00*
7. Courtesy	3.97	1.06	4.61	0.66	-0.65	9.577	0.00*
8. Instructors provide individuals attention to member	3.82	1.15	4.30	0.90	-0.48	6.352	0.00*
9. Provision of consistency	3.83	1.14	4.24	0.91	-0.41	5.143	0.00*
Cronbach's alpha	0.823		0.945				
Program	**3.82**	**0.88**	**4.42**	**0.45**	**-0.50**	**11.544**	**0.00***

10. Variety of program	3.90	1.13	4.21	0.97	**-0.32**	4.159	0.00*
11. Availability of programs at appropriate level	3.91	1.05	4.52	0.65	-0.60	8.915	0.00*
12. Convenience of program time/schedule	3.86	1.22	4.54	0.69	-0.68	9.065	0.00*
13. Quality/Content of programs	3.89	1.09	4.56	0.66	-0.67	9.260	0.00*
14. Appropriateness of class size	3.73	1.15	4.26	0.88	-0.53	7.105	0.00*
15. Background music (if any)	3.63	1.31	4.24	0.98	-0.61	7.786	0.00*
16. Adequacy of space	3.86	1.22	4.64	0.56	**-0.78**	10.218	0.00*
Cronbach's alpha	0.672		0.872				
Locker Room	**3.95**	**1.00**	**4.66**	**0.41**	**-0.71**	**11.939**	**0.00***
17. Availability of lockers	4.15	1.09	4.73	0.48	-0.58	8.983	0.00*
18. Overall maintenance	3.96	1.17	4.73	0.52	-0.77	10.975	0.00*
19. Shower cleanliness	3.70	1.42	4.71	0.60	**-1.01**	11.605	0.00*
20. Accessibility	4.04	1.11	4.52	0.75	**-0.47**	6.173	0.00*
21. Safety	3.90	1.23	4.66	0.62	-0.76	9.987	0.00*
Cronbach's alpha	0.731		0.889				
Facility	**3.76**	**0.92**	**4.19**	**0.68**	**-0.43**	**6.929**	**0.00***
22. Convenience of location	3.96	1.22	4.50	0.78	-0.54	6.781	0.00*
23. Hours of operation	3.80	1.27	4.36	0.90	**-0.55**	6.484	0.00*
24. Availability of parking	3.44	1.37	3.66	1.31	**-0.22**	2.163	0.03*
25. Accessibility to building	3.76	1.26	4.16	1.05	-0.40	4.582	0.00*
26. Parking lot safety	3.46	1.28	3.91	1.21	-0.46	4.942	0.00*
27. Temperature control	3.83	1.23	4.35	0.87	-0.52	6.519	0.00*
28. Lighting control	4.10	1.07	4.42	0.74	-0.32	4.419	0.00*
Cronbach's alpha	0.812		0.866				
Training Facility	**3.94**	**1.03**	**4.53**	**0.48**	**-0.59**	**9.984**	**0.00***
29. Pleasantness of environment	4.06	1.09	4.47	0.68	-0.41	6.069	0.00*
30. Modern looking equipment's	3.99	1.12	4.36	0.81	**-0.37**	5.226	0.00*
31. Adequacy of signs and directions	3.85	1.19	4.45	0.78	-0.59	7.901	0.00*
32. Variety of equipment	3.92	1.19	4.65	0.63	-0.73	9.887	0.00*
33. Availability of workout facility/equipment	3.89	1.23	4.66	0.60	**-0.78**	10.309	0.00*
34. Overall maintenance	3.96	1.20	4.62	0.60	-0.66	9.144	0.00*
Cronbach's alpha	0.791		0.943				
Overall Service Quality	**3.89**	**0.38**	**4.47**	**0.84**	**-0.58**		**0.00***

P= Perceptions, E= Expectations, Significance Level = *p<0.05

When the reliability coefficiencies of the aspects of the service quality are examined, it is seen that its "personal" aspect has 0.82, its "program" aspect has 0.67, its "undressing room" aspect has 0.73, its "physical establishment" aspect has 0.81 and its "training establishment" aspect has a 0,79 of Cronbach Alpha values. The level of 0.60<a<0.80 means that the aspects are reliable, the level of .0.80<a<1.00 are highly relaible (Akgül and Çevik, 2003).

When the differences between the perception and the expectation scores are examined in the aspects of articles, valuable differences in every component of all aspects have been determined. Those differences' being negative shows the low quality of all articles.
The article of personnel's being tidy and well-dressed of the personnel aspect forms the lowest difference with the "34 units of difference" in this aspect, the articles of "personnel's being concerned with the complaints and having the necessary qualities " form the highest difference with the "72 and 71 units of difference".

The article of "having program kinds" forms the lowest difference with the "32 units of difference " the article of "having enough place" forms the highest difference with the "78 units of difference".

The article of "easy access to the undressing room" forms the lowest difference of "47 units of difference", the article of "showers'being clean" form the highest difference with the "101 units of difference".

The article of " having parking lot of the phsical eslablishment aspect" forms the lowest difference with "22 units of difference" in this aspect, and the article of "having suitable activity timing" forms the highest difference with "55 units of difference".

Table 4. The service expactations of irrelevant groups' t-test, according to the sexes

Dimensions	Groups	Expectation			
		X	SS	t	P
Personnel	**Male**	4,50	0,48	1,714	0,08
	Female	4,58	0,38		
Program	**Male**	4,38	0,47	1,960	0,05
	Female	4,49	0,42		
Locker room	**Male**	4,60	0,30	4,221	0,00*
	Female	4,78	0,45		
Physical facilities	**Male**	4,11	0,72	2,622	0,00*
	Female	4,32	0,59		
Training facility	**Male**	4,49	0,52	2,305	0,02*
	Female	4,61	0,39		
General Quality of service	**Male**	4,41	0,40	3,139	0,02*
	Female	4,55	0,33		

***p<0,05**

When the service expectations according to the gender are compared, it is seen that the females have higher expectation levels in all aspects than the males. While the highest

expectation of both females and males is in the aspect of undressing room is (X=4,78;4,60), their lowest expectation is in the aspect of physical establishment (X=4,32;4,11). While there is no meaningful connection statistically in the aspects of "personnel and the program", it is seen that there are meaningful differences in the aspects of "undressing room, physical establishment and the training center". When the expectations of the service quality are examined in general, it is seen that there is a meaningful difference stattistically between the females (X=4,55) and the males (X=4,41) and the females have higher expectation level with 0,14 units than the males (Table-4).

Table 5. The perceptions of the service quality of ırrelevant groups' t-test, according to the sexes

Dimensions	Groups	Perception			
		X	SS	T	P
Personnel	**Male**	3,94	0,84	0,799	0,42
	Female	4,02	0,98		
Program	**Male**	3,80	0,82	0,503	0,61
	Female	3,85	0,96		
Locker Room	**Male**	3,89	0,96	1,260	0,20
	Female	4,04	1,07		
Physical facilities	**Male**	3,79	0,90	-0,786	0,43
	Female	3,71	0,96		
Training facility	**Male**	3,90	1,01	1,003	0,31
	Female	4,02	1,06		
General quality of service	**Male**	3,86	0,80	0,625	0,53
	Female	3,93	0,92		

***p<0,05**

When the service perceptions according to the gender are compared, it is seen that the females in all aspects except "physical establishment" have found the service quality more satisfying than the males. It is seen that there are meaningful differences in all aspects statistically. It is determined that the females' most satisfying aspect (X=4,04) is the aspect of "undressing room", the males' most satisfying aspect (X=3,94) is the aspect of "physical establishment". , both females and males' most unsatisfying aspect (X=3,71;3,79) is the aspect of "physical establishment".. When the perceptions of the service quality are compared in general, it is seen that there are no meaningful differences statistically between the females (X=3,93) and the males (X=3,86). (Table-5).

DISCUSSION and CONCLUSION

When the differences between the scores of perceptions and expectations are examined in the aspects of both articles and aspects, it has been determined that there is a low service quality

in those sport centers. When the service quality is examined in general, it is seen that there is also a low service quality.

It is seen that an important amount of the participants of the study consists of the females (36.7%), 76.3% of them are between the ages of 18 and 30, more than one-third of them (36.1%) are overweight and obese (Table 1). When member participants in two fitness centers are examined according to the gender in the study of Soyguden et al., (2015) it is seen that 75% of them are males and 25% of them are females. In another study of Yildiz and Tüfekci, (2010) the female participants are higher with the 48% rate.

In the study having been done by Soyguden et al., (2015) It is seen that 76.3% of the participants are between the ages of 18 and 30. In addition, the most amount of the participants are university students with the rate of 34%.

Yildiz and Tufekci, (2010) express in their study that 76% of the participants have graduated from the university. Additionally, it is seen that 78% of the participants of the members of fitness center are between the ages of 15 and 25. Afthinos et al, (2005) in their study have determined that the 67% rates of the members of sports centers are below 19 years old and between the ages of 20 and 29. They have found a similar result as in our study.

When the service expectations are compared according to the sexes, it is seen that females have more expectation in al aspects than the males. While the highest expectation of both females and males is İn the aspect of "undressing room" is (X=4,78;4,60), their lowest expectation is in the aspect of "physical establishment" (X=4,32;4,11). In the study of Soyguden et al., (2015) the highest expectation level of the participants has been found in the "personel" aspect, the lowest expectation of them has been found in the aspect of "program". Additionally, in the same study, it is seen that the expectation level of the females are higher than of the males. The result of that difference means that the females have more expectations than the males. It has a similar result as in our study.

When the differences between the scores of perceptions and expectations are examined in the aspects, there is a meaningful difference among all the aspects in negative direction. It is seen that the undressing room aspect has the lowest quality level with the difference of -0,71 units. This aspect is followed by "training center" aspect with the difference of -0,59 units, "personnel" aspect with the difference of -0,56 units, "program" aspect of -0,50 units and "physical establishment" aspect with the difference of -0,43 units.

When the differences between the perceptions and expectations scores are examined in the aspects, it has been determined that all aspects have difference in negative direction. Statistically, it is seen that there is a meaningful difference in the level of $p<0.05$ in the all aspects of personnel, program, undressing room and physical establishment.

Yıldız and Tufekci, (2010) study, it is seen that the personnel aspect has the least emptiness with the units of -0,06 and in the lowest quality level, the undressing room has the highest emptiness with units of -0,47.

Aslan and Kocak, (2011) have found in their study that the undressing room aspect has the highest expectation and the physical establishment has the lowest expectation as in our study.

Yildiz and Tufekci, (2010) have found in tehir study that the females have more service quality expectation than the males. Gurbuz et al., (2012) has found that the females have more undressing room expectation.

Those results obtained, all the customers that get service from the sports institutions in the city of Sivas have the satisfaction more than the avarege, but their expectations haven't been fully met. It has been determined that there is a meaningful difference between the expectation and perception scores in the negative direction. It is seen that the aspect that has the lowest expectation level is "undressing room". "Training center", "personnel", "program" and "physical establishment" aspects follow "undressing room" aspect in order.

Recommandations

For it is important that the customers expectations should be met for them to continue buying the service, the sport businesses need to increase the quality of their service. For that, it is needed to increase the qualities of all the aspects starting with the articles of the undressing room with the lowest quality mentioned above.

It has vital importance how the expectations and perceptions of those businesses' customers and they need to try to increase their quality by determining the deficiencies for the aspects of developing the sector and the businesses' having competition superiority.

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Networks in Hungarian leisure sports – framework for economic analysis and empirical findings

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Abstract

The aim of our research project was to develop our understanding on the role of networks in Hungarian leisure sports. Our research based on 69 in-depth interviews (31 from these were conducted in 2011 with key stakeholders in leisure sports, and the others in 2014 with experts and university students) and a quantitative online survey which was conducted in 2014 among 3374 university students out of twenty universities in Budapest. "Templates" and "Editing" qualitative analysis methods and quantitative data analysis techniques have been used. Through a large sample quantitative on-line survey we explored university students' leisure activities, and the role personal networks could play in increasing their sporting activity. We learned that the strongest drivers for increased leisure sport activity are inner determination and the recommendation of friends and family. While team sports lose popularity, the role of networks as potential facilitators of active pastime was identified. In addition, we outlined a fundamental typology of leisure sport networks in Hungary. Key actors were identified and categorised across two dimensions describing the nature of the networks: the strength and the symmetry of relationships within the networks. Our current empirically based categorisation highlighted room for improvement related to some of the key actors. Overall, the economic and social rationale for networks in leisure sports was demonstrated through our analysis. The key outcomes of efficient networks could be better access to information, more professional operations and, perhaps most importantly, providing the much needed community for doing sports.

Keywords: Leisure sports, network theory, networks in leisure sports, sport activity motivators

INTRODUCTION

The growth of sport's economic implications brought alive the need for its economic analysis. The first publications about sports economics were issued in the USA in the 50's. In the late 60's in England the focus was more on professional sports, typically with team sports and leagues. Today, the topic of professional sports is still dominant; leisure sports do not receive comparable scholarly attention. Downward et al. (2009) drew attention to the lack of theoretical and practical publications on leisure sports in 2009. While leisure sports are becoming an increasingly important area of activity in modern societies, their economic significance has also developed. Doing sports in our leisure time generates value not only at community and individual level, but for the enterprises engaged in provide leisure sports services. Our research interest in focused on understanding the role of networks in leisure sports, either from social or from economical point of view. Furthermore, we aim to explore how thinking in networks may help leisure sports grow in popularity. In light of our literature review, most of existing literature deals with professional sports, hence our interest in leisure sports networks may fill a gap in our current understanding of sports economics.

Network Theory

In order to show the context of our scholarly interest, first we aim to provide a general overview of our current understanding of networks in sports through highlighting key points in literature about networks in general, social networks, networks in sports. Also, we give a brief summary of how Hungarians spend their leisure time and how sport activities fit in their way of life. Networks are everywhere. In our mind, in the society, in the ecosystem, in technological innovations: the brain is the network of nerve cells connected by axons, cells are networks of molecules set by biochemical reactions. Societies are networks of people connected by friendship, family and professional relations. The ecosystem, the internet, electric networks, supply chains are further examples of the existence of networks. Science treated complex networks as accidental, for more than forty years, thanks to the work of two Hungarian mathematics, Pál Erdős and Alfréd Rényi. They suggested that random networks are "democratic", i.e. most nodes of the network are characterized by approximately the same amount of contacts (Erdős – Rényi, 1959, 1960). Nodes follow a Poisson-distribution, and it is extremely rare to find nodes that are characterized by significantly more or less connections than the average. To deny this, in 1998, a search engine robot was created, which collected all outgoing connections of a web page examining how the pages are interlinked (Albert et al.,

1999). In case of random networks, most nodes have approximately the same number of links. Barabási et al. progressed our understanding of networks by explaining that in “scale-free networks” the nodes with limited connections are overrepresented (Barabási – Albert, 1999, Barabási et. al. 1999). Meanwhile, a negligible minority of nodes have a very large number of links. According to Barabási et al. (1999), communities are not developed randomly; there is a certain inner organising force, for example the same interest of people. This may be a useful frame of reference for how sports communities are formed, either as associations or even the followers of a particular club, a professional business venture. According to Harvard sociologist Stanley Milgram (1967), two people in society are typically five or six handshakes away from each other. We live in a small society. The nodes of social networks can be grouped into small clusters, marking circles of friends and acquaintances where each node is connected to other nodes (Granovetter, 1973). For leisure sports these circles of friends and acquaintances may be important. Any non-athlete could be reached if they are only 5-6 handshakes away from an "obsessed athlete", instead of being “far away” from each other. Scale-free networks are not static, but dynamic. They constantly grow, and they tend to grow in a "preferential way", rather than a "democratic way" (Barabási et. al. 1999). A node, rich in relations will rapidly increase the number of its connections, because the incoming nodes are more likely to relate to it. This means that there are "more visible", "important", "fit" hubs. Competitive fitness means, in network terms, the rate of a hub's attraction. Defining the centre of a social network is much more difficult than in the case of the Internet. Everyone has their own network of relations consisting of several communities entangled in each other through hubs.

Social networks

Homans (1984) noted that the analysis of social networks is among the four main research areas of sociology. According to the "lost communities’ theory", traditional community ties broke up by the observed process of the rationalisation in the economy, the widening division of labour, industrialisation and urbanisation. Contacts within a community and the norm of solidarity will be replaced by impersonal, alienated social formations. In the case of leisure sports, the danger arose that team sports will be replaced by individual, or individualistic sports. The "lost communities' hypothesis” was refined in the 1950’s. Among more urban populations, there are communities based on personal contacts, often called "social networks" (Szántó-Tóth, n.a.). These networks can have an effect a person’s health and happiness. The history of social network analysis includes sociometric analysis, the examination of triad

relations and the theory of cognitive relationships. The aim of sociometric analysis in various small groups (for example school classes, workplaces, sports teams) is to quantitatively explore preferred interpersonal relationships, and describe social formations. A triad is interpreted as opposed to an isolated individual or a dyad connection. A third player can further strengthen as well as ruin a relationship or a hobby (doing sport). Two persons' feelings for each other may also be affected by a third party (or an object or an activity). For example, two people who have sympathy towards a third party tend to like each other too (Szántó-Tóth, n.a.). Based on the analysis of Granovetter (1973) and Blau (1977), relations between heterogeneous parties are more likely to be weak than between homogeneous ones. Furthermore, the higher the degree of heterogeneity the greater the probability for a possible bond to be weak. According to Hungarian sociologists Angelusz and Tardos (1988) macro and personal micro-networks may be seen as potential determinants of individual behaviour and opinions. According to Burt (1982) people are purposeful within limitations of social structures. Consideration of alternative actions (e.g. sports) depends to a large extent on the structural characteristics of the social environment, and on the status-role of the given individuals. In the analysis of relationships between actors of networks a range of aspects may be relevant: the content, symmetry, and intensity of the relationships, the motivation and power of participants, or the resources of actors (Achrol et al., 1983; Anderson et al., 1994; Hakansson – Snehota, 1989).

Networks in professional sports

There is a decent range of publications using network theory applied in the field of professional sports. We identified critical "milestones" in the development of the subject that formed a basis for our scholarly efforts, as explained below. Aldrich (1979) identified a number of examples for contexts allowing meaningful network analysis, including the relationship between sports associations, unions (these are the hubs of sports networks), television and radio broadcasting networks and sports institutions. Axelsson (1992) raised that network theory could be applied to the sports context. Wolfe et al. (1997) claimed that there are several network interactions among the different actors of sports, media and sponsors, as Agostini also mentioned media and sponsors in connection with network theory in his work in 1995 (cited by Wolfe et al, 1997). Wolfe prepared a case study about the power issue being a central element of networks. He examined the relationship between network actors such as corporate sponsors, media and owners in sport. He also analysed the changing balance of power in sports networks, as affected by technology, sponsors and ambush marketing, using

the case of the English Rugby Union and BSkyB in 1997. Wolfe concluded by highlighting the need for a relationship view of networks, i.e. the establishment of cooperation, commitment, and trust among the parties. Erickson-Kushner (1999) explored the relationship between network theory and the services provided by organisations arranging major sporting events. They raised sporting events as good examples of network connections and dependencies. They attempted to extend network theory to service organisations: the ability of a network participant to bring its own micro-network of connections to an event network seemed to be critical, as their ability to develop network and event-specific skills.

Leisure sports activity in Hungary

Most research claims that men, younger people, those with higher incomes, living in big cities, and the better educated do more sports in their leisure time (Polányi, 1998; Szonda Ipsos, 2003; KSH, 2006, 2010; Neulinger, 2007; Gál, 2008; Eurobarometer, 2010 and 2014; Paár, 2013; Gál 2014). Paár (2013) estimated that households with members of over 65 years of average age, compared to younger households, spend relatively little on sports. People under 24 years of age spend 7.5 times more on sports than them. The comparable ratio is 5.1 for 35-44-year-olds, 4.5 for 25-34-year-olds, 2.8 for 45-54-year-old household members. People with the highest level of education are most likely to spend on sports, the odds ratio being 3.1, compared to the group of people who are least educated. According to Gál (2008) the proportion of those who play sports, take excursions or walk on a daily basis, is only 26 percent, and it is only 13 percent of people who do so at least three times a week. Excursions and hiking were identified as the most common forms of activity; aerobics, cycling, football, running and swimming were also mentioned, in line with other researches. GfK research in 2009 claimed that cycling is the most popular sport among Hungarians (Gál, 2014), followed by football, swimming and fitness (Bacher, 2010). Considering the Central Statistical Office time-use research (2010) 19 minutes was the average time spent on walking and sports in 1999/2000. Ten years later the comparable number was only 15 minutes. According to the Eurobarometer 2010 survey, only 5 percent of the Hungarian population do sports regularly (5 times a week). The proportion of people doing sports with some regularity was 18 percent. According to the Eurobarometer 2014 survey, there has been an increase in the number of people doing sports 5 times a week (to 15 percent of the Hungarian population), while 23 percent of people did sports with some regularity in 2014. The comparable EU average was 33 percent.

Friends as motivators

There is a distinct body of literature dealing with the motivation in sports consumption. Neulinger (2007, referring to Hoffmann, 2003 and Moore, 1987) identified the following general motivating factors for doing sports: drive for success, need for company (the feeling of "being together"), supporting health and fitness, and quest for entertainment. For men, the most important motives were competing, achieving status and winning. For women, maintaining good health and fitness, managing weight and good shape were key motives, while the need for company was found to gain more importance with age (Goudas et al., 1994). In a German representative survey of 2,500 people, 68 percent of respondents reported that they could be easily persuaded by their friends to do more sports. Especially members of the younger generation reported that good company was essential for their physical activity. 82 per cent of people younger than 30 years gained the necessary motivation from their friends. The survey also showed that younger people, unlike the old, are much more susceptible to external stimuli mobilising them to exercise. According to Laki and Nyerges (1997), there are significant differences in the physical training habits of youngsters living in the capital and those living in rural areas in Hungary. While football and other ball games are dominant among rural youth, six or seven sports are popular among young people living in Budapest. Some of them are new and/or fashionable sports: aerobic, fitness, body building, cycling, jogging and swimming. According to the authors, individualisation is an important feature of modern, fashionable sports. According to Pluhár-Keresztes-Pikó (2003), the time spent with friends increases significantly as the frequency of doing sports increases. Sports have a strong positive relationship with good school performance, the mother's education, the perception of current health, future-orientation, confidence and the sporting habits of friends. Those who do sports regularly value inner values, peace of mind, health, honesty, friendship and family higher than their inactive peers. Neulinger (2007) conducted a quantitative survey among 1,000 university students, and a qualitative enquiry among 92 students, and found that peers and friends are the most important factors of motivation for doing sports. Szabó (2013) found that in addition to football, other team sports (e.g. basketball) and sports requiring two opponents (e.g. tennis, dancing) were also popular among university students. The 2014 TAMOP survey analysing a big sample (3,000 respondents) (Gál, 2014) concluded that the strongest motivating factor was health preservation, better physical performance, and recreation. Having fun, being together with friends were among the top motivators for men,

while managing weight, good shape and fighting aging proved stronger motivators for women (Gál, 2014).

METHODS

Subject

In our explorative research project we aimed to develop a preliminary understanding of the role networks play in leisure sports in Hungary. In addition, we were keen to discern how thinking in networks may help leisure sports grow in popularity, i.e. how to make more people do sports for all its social and economic benefits. We applied different modes of enquiry. We conducted qualitative and quantitative research: in-depth interviews and online survey.

Research sample and data collection

Our research based on:

- 69 in-depth interviews: 31 from these were conducted in 2011 with key stakeholders in leisure sports, and 5 interviews in 2014 with those who are familiar with leisure sports networks ("network experts"), and the other 23 interviews in 2014 with university students;
- and a quantitative online survey which was conducted in 2014 among 3374 university students out of twenty universities in Budapest.

Based on literature review, secondary analysis of 31 in-depth interviews was performed. These interviews were made for understanding the whole leisure sports industry in Hungary in 2011, asking questions about the following topics: operation of leisure sports in Hungary, value creation factors, the markets of leisure sports, the stakeholders, and their goals, roles and tasks, relationships among them, challenges, key problems. So we "re-analysed" the more than 500 pages in 2014, concentrating on the topic networks. In addition, five new interviews were made with "network experts" in 2014 with the primary questions (description and role of leisure sports networks, key players and nodes, most important motivators of the players to participate in the network, advantages of belonging to such a network) focused on identifying the relevance of network thinking in sports, and describing those networks. We selected the interviewees in the samples (in 2011 and in 2014 also) via considerations of what seemed opportune and using the snowball method (Miles-Huberman, 1994, cited by Bokor, 2000). We asked each of our interviewees to recommend people with whom it would be essential to

speak in order to write the best possible study on leisure sports and networks. If two interviewees recommended the same person we tried to get into contact with them, in most cases with the help of the person who recommended the new interviewees. In parallel, a quantitative survey on a large sample was conducted in 2014. The on-line survey of university students from Budapest was performed by Bíbor Béka, a civil initiative supporting health and environmental consciousness, in cooperation with the Sport Business Research Centre of Corvinus University of Budapest (Bíbor Béka, 2014). The questionnaire was developed as a joint effort of colleagues from Bíbor Béka and Corvinus, its key topics covering the motivation of leisure sport involvement, the drivers of selecting between sports, and the factors that could support more involvement from the diverse group of students surveyed. Validity was controlled by the test running of the questionnaire in a small test sample of 19 students, and the refinement of the questions based on the findings from qualitative interviews. Inter-coder reliability was also checked. The questionnaire was available on the www.biborbeka.hu website between 5 December 2013 and 16 January 2014. Students volunteered to fill the form they have learnt about through various channels: targeted on-line advertisement, university newsletters, and the websites and social media pages of student bodies and university sports centres. 3,374 answers were received from students of over twenty universities (public and private) in Budapest including the four major universities (Budapest University of Technology and Economics/BME, Corvinus University of Budapest/Corvinus, Eötvös Lóránd University/ELTE, Semmelweis University/SE) contributing with 500+ questionnaires filled. With regards the research population, there were 295,316 university students in the first semester of 2014/2015 in Hungary, and the four large universities with students numbering close to or over 20,000 made up approximately 50% of the total number of university students in Budapest. The on-line survey was supplemented by 23 in-depth interviews with university students in Budapest providing further insights into the thinking and feelings students related to leisure sports and networks. Based on the answers provided, students were grouped into three categories: (1) active leisure athletes, doing sport at least three times per week; (2) casual athletes doing sport once or twice per week; (3) passive students who do not do sports on any regular basis. The consideration behind this grouping of students in the original Bíbor Béka study was to allow the analysis of what makes people do sports at least 3 times a week, and how the other two groups could be stimulated or supported to become more active for all the health and social benefits of leisure sport involvement.

Data analysis

There are four methods for analysing the typescripts of interviews: 1. „Quasi statistical analysis": counting and categorizing the words and expressions. This is an objective, systematic, quantifiable method. 2. „Templates": analysis through certain categories and topics. These categories may expand analysing the text. The categories may stem from the existing knowledge base (priori) and the interviews' text and analysis (posteriori). 3. „Editing": the analyst approaches the text like an editor, seeking out meaningful topics, copying, pasting, cutting and rearranging. Glaser and Strauss' "grounded theory" provided a good example for the editing methodology. Everything comes from the text. It is necessary to continue analysing and interpreting up until the point where the text does not contribute anything new to the given category. It is essential to acknowledge preconceptions and describe them explicitly. 4. „Immersion/crystallization": total immersion in the topic and not only theoretically, and the researcher observes everything in connection with the topic. We used the "Templates" and "Editing" qualitative analysis methods.

In the quantitative part SPSS15 was used to analyse the 3374 questionnaires. Descriptive statistics were carried out. Close to 60% of university students are female, which was reflected in the research sample as well. 62% of the 3,374 students who responded to the questionnaire were women, 38% were men. The majority of them were born between 1988 and 1994; hence they were 20-26 years old. 34% of respondents lived in Budapest, and additional 12% lived in the agglomeration of the capital city.

RESULTS

Our empirical investigation uncovered the general context of students' leisure sport activity, their primary motives, and reasons for their related decisions. Throughout the analysis we aimed at identifying the role of networks in their activities.

Leisure time activities of students

Based on our 2014 survey results, Budapest students spend most of their leisure time with activities they can do at home, i.e. involving no real physical activity. Among girls, for passive students, using the Internet (80%), meeting friends (69%), listening to music (48%), reading (43%) and watching TV or video (42%) were the top five leisure activities. For casual athletes doing sports could get to position #5 with 45% of respondents mentioning sports as one of their top leisure activity. Responses from boys were similar related to all activities with

sports receiving somewhat higher scores (56% for casual athletes).

Key motives for different sports

Team sports proved to be less popular overall than individual sports. This is understood to be mostly due to difficulties in organising a larger number of people for regular leisure activities with modern entertainment opportunities abound. Also, key motivational factors for selecting sports are supporting health, improving physical performance and good shape, all of which are more associated with individual sports like running, cycling, swimming (56% of respondents linked each of these sports with direct health benefits) or fitness (55%), rather than with team sports like football (50%) or basketball (33%). Characteristically, when it comes to spending time with friends as a motivation for doing sports, it was football that scored the highest (46% of respondents linked playing football with spending time with friends); twice as high score as any other sport. Gaining new friends is less typical a motive for doing sports; still, it was a team sport, volleyball, that scored highest on that aspect (7%).

How students choose leisure sports

Students seem to be casual in their selection of sports for their leisure activity. 68% of respondents were relaxed when making their choice to try something new, and did follow-up by regular activity if they liked what they experienced. Practical aspects, like physical proximity of sports facilities scored also high (45%). Potential network impact is revealed by answers denoting the effect of recommendations by friends and family as factors of decision. The overall score of that factor was 37% with relatively little variance across different sports. There were but two sports that scored much higher from that aspect: swimming (48%) and volleyball (49%).

What could be done to stimulate sport activity

When providing answers on what should change to instil more intensive sporting activity among university students, respondents opined strongly about the need for inner determination as the strongest factor. 70% of passive students noted that as a potentially decisive factor. Interestingly, the second highest score was achieved by the need for friends joining one's efforts to do sports in leisure time. 40% of passive students would need accompanying support from friends for them to take the necessary first step for a healthier, more active life. Already active students were naturally more relaxed on this issue as they are

already quite involved in a lot of physical activities.

Actors and characteristics of networks in leisure sports

Analysing our in-depth interviews, we embarked on "mapping" the potential actors in leisure sports in Hungary. Also, we examined the symmetry of relationships, their intensity and stability among the actors of the given network. The typology shown in the table highlights the potential role actors may play in running efficient networks in leisure sports.

Table 1. Typology of leisure sports networks

	Stable, permanent, intensive relationship	**Less stable, non-permanent or less intensive relationship**
Symmetric relationship	Employer cups, competitions Running Ambassador Programme	Hungarian Sports Science Society's committees and programmes
Asymmetric relationship	Different programmes for making leisure sports more popular (Coca-Cola Awakening Programme, Sport as Medicine Programme, Programmes of Event Organisers)	Leisure sports associations, unions and members Leisure sports sponsors Leisure sports event networks

Source: based on Szabó, 2012, elaborated by the authors

Key words often used by interviewees in their answers describing networks were: link, connect, join forces, interact, cooperate, pull, motivate, inform, communicate, organise. The "hub", the most important actor of a sports network is usually a sport enthusiast, who often used to be a professional athlete, or/and a powerful organiser with a wide range of connections in the field of sports. The adjectives which the interviewees used most often to describe that person were: enthusiastic, determined, committed, expert, skilful, powerful, well-known, accepted, recognised, and trustful. Everybody agreed on that fact that a person who is a "great, sports loving character" can build a network and can attract many people, because everybody wants to feel that enthusiasm. Characteristically, the "feelings we feel together" while doing sports are more valuable than doing the same sport on an individual basis. Community builds commitment in the psyche. The most important advantages conceived related to networks in leisure sports were the opportunity to build relationships, get answers to questions quickly or access to useful information. The organisation of leisure programmes and events could also be enhanced through efficient use of networks. The

learning opportunity networks may provide could lead to more professional and efficient operations and eventually higher bargaining power for the given community. Last but not least, the motivating power of networks was mentioned, in line with our survey findings referred above.

DISCUSSION

Our objective of developing our understanding on the role of networks in Hungarian leisure sports addresses a gap in existing economic literature of sports. Through a large sample quantitative on-line survey we explored university students' leisure activities, and the role personal networks could play in increasing their sporting activity. This was supported by the analysis of 69 interviews with key stakeholders in leisure sport, "network experts" and university students. From a network analysis point of view the findings of leisure activities underline the dominance of individual activities in students' leisure time, where doing sports is one of the options involving meeting other people and developing or maintaining a network. Our findings suggest a balanced view on networks' role in leisure sports, as team sports seem to be losing ground in students' life, potentially because of insufficient support from their personal network of leisure partners. Alternatively, their personal networks may transpire through other activities, i.e. on-line relationship building, requiring less of physical presence. Questions on whether these are sustainable patterns are quite open. From our interviews we learned that volleyball seems to have a strong community base at a number of universities in Budapest. We learned that the strongest drivers for increased leisure sport activity are inner determination and the recommendation of friends and family. While team sports lose popularity, the role of networks as potential facilitators of active pastime was identified. Even individual sports bring more excitement when done in good company. In addition, with the help of the interviews we outlined a fundamental typology of leisure sport networks in Hungary. Key actors were identified and categorised across two dimensions describing the nature of the networks: the strength and the symmetry of relationships within the networks. In case of symmetric relationships both the management and the members of the network are mutually receiving benefits and rely on each other. Hence, these networks are a potentially stronger basis for long term relationships. Leisure sport associations, for example, are probably unintentionally located in the weakest section of the matrix. Their role could be strengthened by developing more symmetric relationships with their members, and by generally building stronger personal relationships among members. According to the interviewees network theory seems relevant in leisure sports. The most frequent answers,

ideas were related to self-organised sport communities. There seemed a link with doing sports together, regardless of whether it is the case of more formal sport clubs (karate, judo, yoga), or dance schools, leisure events, trainings or pastime programmes. A small running community or an employer's sports initiative could be the basis for a network, or the first step towards a network to be developed. An enthusiastic person could act as a "hub" in the network. Our current empirically based categorisation highlighted room for improvement related to some of the key actors, like leisure sports associations and unions. Overall, the economic and social rationale for networks in leisure sports was demonstrated through our analysis. The key outcomes of efficient networks could be better access to information, more professional operations and, perhaps most importantly, providing the much needed community for doing sports.

CONCLUSIONS

The implications of our study are related to policy making trying to stimulate more leisure sport activity in modern society, as well as business ventures willing to address valid consumer needs in a developing market. Furthermore, through the application of network theory in the complex field of leisure sports may provide a framework for future analytical studies of particular topics including motivation mechanisms, organisational processes or social impact.

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The effects of feedback on the physical education majors' acquisition of cardiopulmonary resuscitation skills

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Abstract

Aim: To examine the effects of knowledge of results on CPR skill acquisition in undergraduate students. **Subjects:** Participants included fifty-one undergraduate physical education majors enrolled in the Healthcare Knowledge and First Aid course**. Method:** After receiving conventional four-hour CPR training, the participants completed a pre-test on CPR skill execution. Based on the pre-test scores, the participants were assigned to the following two groups: experimental (knowledge of results) and control. A week after the pre-test, participants practiced the CPR ventilation and compression skills. During this practice, the participants in the experimental group received feedback related to the results of their CPR skills measured by the Resusci Anne® SkillReporter™ manikin. The participants in the control group did not receive any feedback related to the outcome of their skills through the manikin. **Results:** Results showed that the conventional four-hour CPR training was not sufficient for undergraduate students to acquire the majority of the CPR skills. However, it was observed that receiving knowledge of results in practice significantly improved the experimental group's ventilation and compression skills. **Conclusion:** It seems important that health educators should consider including augmented feedback in the form of knowledge of results into their training programs when teaching CPR skills.

Keywords: Healthcare, first aid, first responder, CPR, feedback, KR

INTRODUCTION

Healthcare Knowledge and First Aid is one of the Turkish Physical Education Teacher Education Program's compulsory courses, and mainly focuses on to equip students with theoretical knowledge and practical application to administer basic and necessary first aid skills (Council of Higher Education-CoHE, 2006). These knowledge and skills are important because it helps to save lives of individuals. However, studies have shown that knowledge and skills acquired in first aid courses have not resulted in successful application of these knowledge and skills in actual emergency situations. In order to improve skill acquisition and retention during training European Resuscitation Council suggests the usage of feedback, especially from devices (Soar et al., 2010).

Feedback is one of the most critical and influential factors that affect motor skill learning and performance, and "task-intrinsic (or sensory)" and "augmented (or extrinsic)" feedbacks are two primary types of feedback (Magill, 2001; Sage, 1984). Task-intrinsic feedback is sensory feedback that is obtainable from sensory systems while performing a skill; but augmented feedback is mainly from a source, such as an instructor, a trainer, or a device, external to the performer (Magill, 2001). There are also different subtypes of augmented feedback, but this study is mainly focused on knowledge of results, in which the performer extrinsically provided by the feedback on the extent to which he/she was achieved the intended outcomes of performing a skill. Task-intrinsic and augmented feedbacks are interconnected; like other types of augmented feedback, knowledge of results facilitates task-intrinsic feedback (Magill, 2001; Sage, 1977; Schmidt, 2005; Shea et al., 1993). While the provision of task intrinsic feedback by various sensory systems during and/or after the movement contributes skill learning alone in some cases; there have been some other occasions where feedback from various external sources is inevitable (Swinnen et al., 1990). In contrast to the general belief, Magill reported that external feedback does not always benefit skill learning (Magill, 1994). He emphasized that augmented feedback has a variety of influences on skill learning depending on the characteristics of the learner, the characteristics of the skill being taught, and the characteristics and the meaningfulness of the augmented feedback that will be provided. He also suggests that when providing augmented feedback one should consider "what information to give, how and how often to give it." Considering that there are many different types of motor skills ranging from simple to complex, it is evident that the field is

highly diverse and necessitates scientific understanding of the relationship between motor skill learning and feedback.

Cardiopulmonary Resuscitation (CPR), mostly recognized as complex, is one of those skills that make a difference between life and death (Madden, 2006; Spooner et al., 2007). Although compression only CPR has increasingly gained popularity in recent years, conventional CPR, which is a combination of mouth-to-mouth ventilations and chest compressions, is still one of the most essential lifesaving first aid skills (Ogawa et al., 2011). The quality of these skills, which provide oxygen and circulation to vital organs and the brain, has a critical impact on the survival of cardiac arrest victims. The components of high-quality CPR for adults include chest compressions of adequate rate and depth, allocation to complete chest recoil after each compression, minimization of interruptions during compression, and prevention of excessive ventilation (Travers et al., 2010). CPR is also a highly complicated technique that requires both cognitive and motor capacity and includes nine perceptive and eight physical proficiency capacities (Miyadahira, 2001). Due to the complexity of CPR skills, trainees have difficulty in acquiring those skills even shortly after receiving training (Miyadahira, 2001; Spooner et al., 2007). Despite its proven importance in saving lives when the heart stops its functions, studies have reported deficiencies in CPR skill performance even when performed by well-trained hospital staff (Abella et al., 2005; Losert et al., 2006; Semeraro et al., 2006). For example, Wik et al. (2005) examined the quality of out-of-hospital CPR performance by ambulance personnel and found that most of the time the personnel performed too shallow chest compressions and they did not perform chest compressions half of the time. Similarly, in a study examining the quality and efficiency of bystander CPR, Van Hoeyweghen et al. (1991) reported that bystanders performed CPR correctly half of the time.

The major reasons for a CPR skill deficiency, even among trained people, were reported as complexity and difficulty of CPR skills, poorly designed and inefficient curricula and instructor training to satisfy the needs of the trainees, lack of teaching programs in CPR trainer programs, lack of CPR skill practice time due to the presentation of irrelevant content during training, and poor supervision by trainers (Chamberlain & Hazinski, 2003). Several recommendations related to the structure of training programs have been made in order to solve problems of CPR skill acquisition. As mentioned before, CPR is composed of complex skills, it is very hard for trainers to perceive its effectiveness through direct observation during training, and CPR trainers might have some problems in providing corrective feedback, which is reported as a major element of effective skill learning (Buekers et al., 1992). For this

reason, technological devices, which provide high quality and objective data on CPR, are strongly recommended during CPR training by authorities (Chamberlain & Hazinski, 2003; Soar et al., 2010; Spooner et al., 2007). Accordingly, in the recent years, there has been a growing interest in using feedback devices to enhance maximum CPR skill acquisition. Numerous studies have been conducted to determine the effects of different types of feedback devices on various elements of CPR skills and the findings of some of these studies confirmed the effectiveness of feedback on improvement of skills following training (De Regge et al., 2012; Li et al., 2013; Mpotos et al., 2013). However, some other studies reported opposing conclusions. While some studies indicated that these devices were effective, others claimed that the devices were ineffective, not better than training without device and in some occasions had disadvantages. For instance, Zapletal et al. (2014) compared three different CPR feedback devices with no feedback training and found that chest compression quality was not improved by using any of these devices compared to no feedback training; overall performance of participants was below the standard; and all feedback devices caused serious time lost for performers to start CPR (Zapletal et al., 2014). Gruber et al. (2012) also emphasized the complexity and difficulty of CPR procedures and reported that feedback systems increase the level of complexity level and burden. They also reported that, although these devices encourage bystanders to perform CPR and help them feel secure; bystanders still need to be able to perform CPR without using any device. When examining the number of cardiac arrest patients and bystanders in a global context, the probability of using such devices during training or during actual CPR appears to be very low. Presumably, in the case of a cardiac arrest, majority of interfering people will perform CPR without any feedback from any sources. It is still crucial that, during training, the learners should be provided with sufficient information in relation to their performance of the skill being learned. However, provision of such information too often negatively affects learning by preventing learner to use this information as a contributor to sensory information and performing the task independently (Magill, 1994).

Based on the above considerations, the present study aimed to explore the effects of knowledge of results on CPR ventilation and compression skill acquisition among university students. Knowledge of results, as an external source of information for learners, derived from the Resusci Anne® SkillReporter™ manikin in the form of printed feedback about the correctness of ventilations and chest compressions. This information expected to be used by participants to support their sensory information and accordingly improve their CPR

performance. Whereas, the participants in the control group received no feedback from the manikin, and they were anticipated to use information that they gathered during training to support their sensory information. For this reason, it was hypothesized female and male students in knowledge of results group would perform better CPR compression and ventilation than female and male students in the control group.

METHODS

Participants

Participants were 51 first-year undergraduate physical education majors (24 female, 27 male) aged 18 to 23 years (M_{female}= 19.33, *SD*= 1.13, M_{male}= 20.52, *SD*= 1.25). The students were enrolled in a "Healthcare Knowledge and First Aid" course during the spring semester of 2012-13 academic years at a School of Physical Education and Sports, in Turkey. Participation was voluntary and informed consent was obtained. Participants were free to withdraw from the study at any time. None of the participants had prior hands-on CPR skill training or experience. Although participants of the study are limited to the students taking the "Healthcare Knowledge and First Aid" course, sample size of 51 is acceptable and sufficient to conduct experiential study and to conduct factorial ANOVA (Cohen, 1988; Fraenkel & Wallen, 2006).

Measures

Participants' CPR skill performance was measured electronically by the ResusciAnne® SkillReporter™ CPR training manikin, which provides a printed outcome report on ventilation (such as average volume of ventilations, the number of correct ventilations, percentage of correct ventilations, the number of too much ventilations with too much inflation, the number ventilations with too little inflation, and the number of too fast ventilations) and compression skills (such as average depth of compressions, the number of correct compressions, percentage of correct compressions, the number of too deep compressions, the number of too shallow compressions, the number of wrong hand positions, the number of too low hand positions, and the number of incomplete releases). Demographic information including participants' age and sex was obtained as well. 2010 ERC guidelines recommend a chest compression depth of at least 5 cm and at a rate of at least 100 per minute. Although no specific target values were given for appropriate ventilation, it was

recommended by ERC that the rescuer should administer each breath over about 1 s by providing enough volume (approximately 500-600 ml) to make the chest rise. For effective chest compressions, hands of the rescuer recommended to be located in the center of the casualty's chest along the breastbone by allowing full chest recoil of the chest compression after each chest compression.

Procedure

To determine the impact of knowledge of results on participants` achievement on CPR ventilation and compression skills, the current study was carried out using a quasi-experimental design consisting of pre-test, post-test and control group. CPR ventilation and compression skills were measured at pre-test and post-test. A quasi-experimental design was utilized since randomization of the participants was not possible. Either a convenience sample of participants in this study was not assigned randomly to the experimental or the control group, rather they were assigned purposively based on their ventilation and compression skill performance at the pre-test and by sex.

First, the participants were given a brief overview of the study. Next, they signed an informed consent form. The conventional four-hour CPR training, which was prepared based on the European Resuscitation Council-ERC Guidelines for Resuscitation, was delivered to the participants (Koster et al., 2010). The training included three phases: an initial face-to-face lecture, a question-answer period, and a practice session. The lecture phase included an explanation about the steps involved in performing adult CPR. At this phase, the participants were provided with an opportunity to reflect on their understanding of the information presented. Afterwards, the question and answer period was conducted. At this phase, the instructor answered the students' questions and addressed their concerns. In the last phase, the participants were practiced the CPR ventilation and compression skills individually on a manikin. During the practice, the effectiveness of the participants' performance was observed and assessed by the instructor. The feedback devices were not used; thus, the decisions related to the participants' performance were made by the instructor who provided the necessary feedbacks. A week after the CPR training, a pre-test including 10 sets of 30:2 CPRs (1 set = 30 chest compressions and 2 ventilations) was conducted. The participants individually performed the CPR skills in an isolated laboratory environment. After the pre-test, the participants were ranged based on their sex and performance of ventilation and compression skills measured by the Resusci Anne® SkillReporter™ manikin at the pre-test. According to

their performance scores, the participants were assigned one-by-one into either experimental group (n = 26) or control group (n = 25). This assignment was made to minimize the chance of sampling two groups that are not homogenous. Specifically, it was assumed that the assignment method produced two groups that are homogeneous with respect to achievement and sex. In order to prevent the CPR skill decay and maximize skill development and acquisition, the participants were asked to perform 5 sets of 30:2 CPR a week after the pre-test. After performing the CPR skills, all participants rested for 5 to 7 minutes. During this resting period, the participants in the knowledge of results group (i.e., the experimental group) received feedback in the form of printed CPR ventilation and compression skill performance, whereas the participants in the control group were not provided with any information related to their performance. The feedback related to knowledge of results included various numerical information on the elements of ventilation and compression skills (see the measure section above). Finally, the participants received a post-test containing 10 sets of 30:2 CPR executions that were administered at the pretest. The graphic depiction of the test procedure is shown in Figure 1.

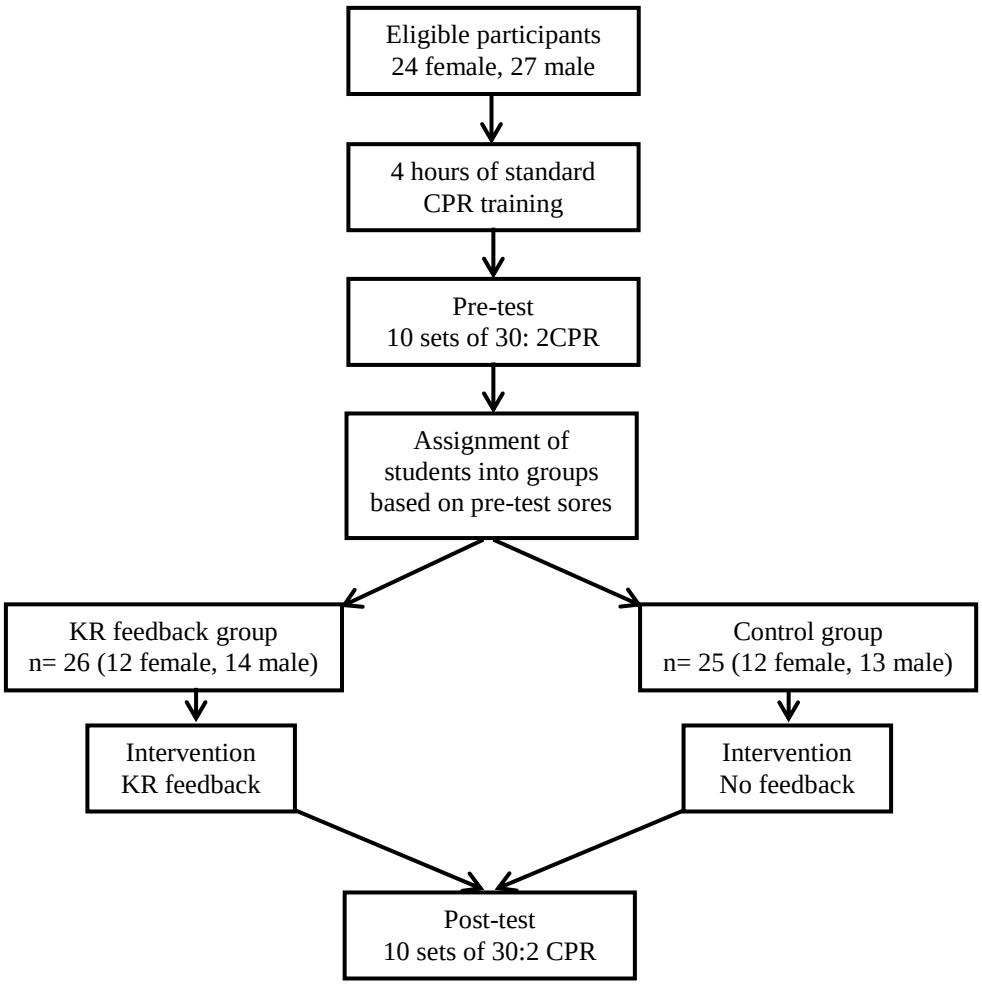

Figure 1. Flow chart of study design

Analysis

To find out the separate effects of test (pre-test, post-test), group (knowledge of results group, control group) and sex (female, male) on CPR ventilation and compression skills a three-way repeated measures ANOVA was used. Simple main effects analysis was used to determine the form of any significant interactions. Effect size for interaction and main effects was determined based on eta squared ($\eta 2$).

RESULTS

A 2 (sex: male and female) x 2 (groups: knowledge of results and control) x 2 (tests: pretest and post-test) analysis of variance (ANOVA) was conducted on participants' performance of ventilation skills. The results of this analysis as well as means and standard deviations are shown in Table 1. Three way interactions between sex, group, and test were not found to be significant, except average number of ventilations per minute [$F(1, 47) = 6.11$, $p = .02$, $\eta^2 = .099$]. There was a significant test and group interaction effect for number of correct ventilations [$F(1, 47) = 110.82$, $p = .001$, $\eta^2 = .426$], percent of correct ventilations [$F(1, 47) = 69.51$, $p = .001$, $\eta^2 = .384$], number of too much ventilations [$F(1, 47) = 10.76$, $p = .002$, $\eta^2 = .123$], and number of too fast ventilations [$F(1, 47) = 23.42$, $p = .001$, $\eta^2 = .298$]. Analysis of simple main effects showed that, for participants in the control group above skills were similar from pre-test to post-test. However, participants in the knowledge of results group improved their identified skills after receiving feedback. Additionally, simple main effects analysis showed no significant group difference in terms of ventilation skills was observed during the pre-test, but significant difference was found between the control knowledge of results groups during the post-test. Participants in the knowledge of results group improved significantly compared with participants in the control group. Group factor produced significant main effect on the number of correct ventilations [$F(1, 47) = 42.67$, $p = .001$, $\eta^2 = .475$], percentage of correct ventilations [$F(1, 47) = 37.97$, $p = .001$, $\eta^2 = .447$], and the number of too fast ventilations [$F(1, 47) = 23.21$, $p = .001$, $\eta^2 = .325$] indicating participants in the knowledge of results group performed better in above skills than the participants in the control group. Furthermore, the main effect of test was found to be statistically significant for average ventilation volume [$F(1, 47) = 31.22$, $p = .001$, $\eta^2 = .369$], average number of ventilations per minute[$F(1, 47) = 8.23$, $p = .006$, $\eta^2 = .134$], minute ventilation volume [$F(1, 47) = 7.85$, $p = .007$, $\eta^2 = .135$], total number of ventilations[$F(1, 47) = 9.44$, $p = .004$, $\eta^2 = .154$], the number of correct ventilations [$F(1, 47) = 97.54$, $p = .001$, $\eta^2 = .375$], percentage of

correct ventilations [F (1, 47) = 53.31, p = .001, η^2 = .327], number of too much ventilations [F (1, 47) = 29.39, p = .001, η^2 = .337], and number of too fast ventilations [F (1, 47) = 7.75, p = .008, η^2 = .098] indicating that the groups performed better in ventilation skills in the posttest.

Table 1. Three-way repeated measure ANOVA of ventilation skills

		Control				Experimental			
		Women		Men		Women		Me	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Average volume[a]	Pre-test	805.00	377.30	1062.31	403.65	955.00	272.61	1110.71	372.90
	Post-test	710.00	191.41	767.69	190.49	662.50	50.65	656.43	86.88
Average no. per min.[a, e]	Pre-test	3.42	1.98	4.38	0.96	4.00	0.85	3.43	1.45
	Post-test	4.67	0.89	4.38	0.96	4.17	0.83	4.43	1.02
Minute volume[a]	Pre-test	3,175.00	2,163.45	4,533.85	1,781.18	3,827.50	1319.44	3,975.71	2,414.52
	Post-test	3,295.83	912.80	3,354.62	1,074.75	2,750.00	522.30	2,827.86	611.72
Total number[a]	Pre-test	15.83	7.49	19.46	1.56	18.50	2.58	17.86	4.42
	Post-test	19.75	1.60	19.31	2.18	20.25	0.75	20.57	1.50
Number correct[a, b, d]	Pre-test	3.00	5.19	3.31	4.92	2.33	2.96	3.57	6.01
	Post-test	3.00	4.82	2.46	3.62	17.50	2.28	14.93	2.97
Percent correct[a, b, d]	Pre-test	16.92	27.40	16.85	24.37	13.17	17.24	24.14	37.32
	Post-test	15.17	24.12	13.77	20.01	86.33	11.48	72.64	14.74
Too much[a, d]	Pre-test	8.50	9.02	12.00	8.98	13.08	7.45	12.64	8.07
	Post-test	5.75	8.55	8.77	9.60	0.42	1.44	1.00	2.54
Too little	Pre-test	0.92	1.38	0.54	1.66	1.25	1.82	0.64	1.01
	Post-test	2.75	6.33	1.92	3.66	0.42	0.79	2.29	1.64
Too fast[a, b, d]	Pre-test	0.92	1.38	0.54	1.66	1.25	1.82	0.64	1.01
	Post-test	2.75	6.33	1.92	3.66	0.42	0.79	2.29	1.64

Note:[a]Test main effect,[b]Group main effect,[c]Sex main effect,[d]Test×Group interaction effect,[e]Test×Group×Sex interaction effect

A 2x2x2 ANOVA was also conducted on participants' performance of compression skills (Table 2). The results showed no interaction among sex, group and test, except number of too shallow compressions [F (1, 47) = 7.94, p = .007]. Simple main effects analysis showed that contrary to participants in control group, participants in the knowledge of results group decreased their number of too shallow chest compressions from pre-test to post-test, p< .05. The results also showed a significant test and group interaction for the skills of average depth [F (1, 47) = 20.56, p = .001, η^2 = .199], number of correct compressions [F (1, 47) = 181.17, p = .001, η^2= .427], percent of correct compressions [F (1, 47) = 181.26, p = .001, η^2 = 430], number of too shallow compressions [F (1, 47) = 44.82, p = .001, η^2= .295], number of wrong hand positions [F (1, 47) = 35.70, p = .001, η^2= .348], and number of too low hand positions [F (1, 47) = 6.13, p = .017, η^2 = .113]. Simple main effects analysis demonstrated that contrary to participants in control group, participants in the knowledge of results group improved these CPR compression skills from the pre-test to the post-test. Also, analysis showed no difference between the knowledge of results group and the control group in terms of compression skills in the pre-test; but showed significant difference in the post-test, indicating that participants in the knowledge of results group improved their skill performance due to feedback session during the post-test. The results also showed significant sex effects for average depth [F (1, 47) = 13.90, p = .001, η^2 = .164], number of too shallow compressions [F (1, 47) = 15.53, p = .001, η^2= .172], and number of incomplete releases [F (1, 47) = 7.74, p = .008, η^2 = .135] indicating that female participants performed the above skills differently compared with males. The results showed a significant group effect for average depth [F (1, 47) = 23.42, p = .001, η^2= .277], number of correct compressions [F (1, 47) = 46.26, p = .001, η^2 = .482], percent of correct compressions [F (1, 47) = 46.71, p = .001, η^2 = .486], and number of too shallow compressions [F (1, 47) = 27.95, p = .001, η^2 = .309], indicating an improvement in the knowledge of results group. The results showed significant test effects for average depth [F (1, 47) = 33.48, p = .001, η^2 = .324], number of correct compressions[F (1, 47) = 195.89, p = .001, η^2 = .461], percentage of correct compressions [F (1, 47) = 191.98, p = .001, η^2= .456], number of too shallow compressions [F (1, 47) = 52.12, p = .001, η^2 = .343], and number of wrong hand positions [F (1, 47) = 18.68, p = .001, η^2 = .182] indicating that groups did change in skills over time.

Table 2. Three-way repeated measure ANOVA of compression skills

		Control				Experimental			
		Women		Men		Women		Men	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Average depth[a, b, c, d]	Pre-test	35.92	7.73	41.92	8.95	37.67	6.54	45.50	8.71
	Post-test	36.25	6.81	44.69	11.59	52.75	2.53	56.00	2.22
Average no. per min.	Pre-test	82.25	32.61	76.31	12.95	73.58	10.38	66.93	14.78
	Post-test	76.83	9.02	77.54	11.32	71.50	11.07	73.21	12.27
Average compression rate	Pre-test	120.17	20.08	126.31	23.99	123.58	17.91	118.93	19.95
	Post-test	119.17	16.29	121.38	18.56	126.42	18.95	131.14	20.05
Total number	Pre-test	279.25	87.48	303.00	8.26	310.83	13.22	306.71	20.66
	Post-test	304.58	9.29	303.46	14.81	304.92	12.67	311.71	21.15
Number correct[a, b, d]	Pre-test	10.58	35.12	33.31	66.42	0.92	1.78	26.07	62.53
	Post-test	9.25	18.52	43.15	102.92	225.92	51.98	237.07	60.25
Percent correct[a, b, d]	Pre-test	3.42	11.52	10.77	21.91	0.17	0.39	8.36	20.64
	Post-test	2.83	6.13	13.38	31.88	74.00	18.08	76.29	20.38
Too deep	Pre-test								
	Post-test								
Too shallow[a, b, c, d, e]	Pre-test	260.33	103.20	225.38	95.96	299.58	20.30	178.43	132.56
	Post-test	294.58	23.26	175.38	142.75	48.00	45.66	11.93	9.17
Wrong hand position[a, d]	Pre-test	103.67	107.01	112.92	95.54	197.17	98.34	166.43	106.49
	Post-test	117.58	89.92	143.15	110.99	41.75	35.20	46.71	45.84
Hand position too low[d]	Pre-test	0.08	0.29	15.92	34.57	21.83	73.45	38.50	76.49
	Post-test	10.33	24.23	34.31	77.29	0.00	0.00	4.00	7.49
Incomplete release[c]	Pre-test	0.00	0.00	21.15	52.16	0.08	0.29	41.86	88.87
	Post-test	0.00	0.00	6.38	16.48	0.50	1.73	24.29	53.07

Note: [a]Test main effect, [b]Group main effect, [c]Sex main effect,[d]Test×Group interaction effect, [e]Test ×Group×Sex interaction effect

DISCUSSION

The present study examined the effects of knowledge of results on skill acquisition in two critical elements of CPR: ventilations and compressions. Participants in the knowledge of results group were provided with numerical information relating to their performance on 10 sets of 30:2 CPR. The effectiveness of knowledge of results was determined by comparing the knowledge of results group with the control group, which did not receive any feedback at the intervention on their ventilation and compression performance. Two important findings of this study were that most of the participants lacked ability to apply high quality ventilation and compression skills following the conventional CPR training; and knowledge of results improved ventilation (number of correct ventilations, percentage of correct ventilations, number of too much ventilations, and number of too fast ventilations) and compression (average depth, number of correct compressions, percent of correct compressions, number of too shallow compressions, number of wrong hand positions, number of too low hand positions) skills of university level students.

One of the two major findings of this study was that after completing the conventional CPR training, the pre-test average ventilation and compression performance scores of all participants was not very encouraging and in line with the existing body of evidence, which resulted in poor CPR quality after training (Bohn & Gude, 2008; Chamberlain et al., 2002; Perkins et al., 2008; Sutton et al., 2012). Similar to the current study's findings, previous studies have demonstrated that CPR performance was low after initial training (Abella et al., 2005; Eisenburger & Safar, 1999; Jabbour et al.,1996; Parnell & Larsen, 2007; Roh & Issenberg, 2014; Wik et al., 2005). For example, Abella, et al. (2005) demonstrated that the CPR quality did not meet recommended guidelines after training even by well-trained hospital staff (Abella et al., 2005). Furthermore, the pre-test results of the current study are in agreement with the results of Brennan and Braslow (1995, 1998) which aimed to investigate the effectiveness of CPR performance in training classes (Brennan & Braslow, 1995, 1998). Specifically, Brennan and Braslow found that less than 17% of the compressions and 27% of the ventilations were performed correctly by trainees following these CPR training classes. In the current study, participants both in knowledge of results and control group performed around 24% of total ventilation skills and 11% of total chest compression skills correctly a week after the training.

Failure to acquire the CPR skills after training can stem from many causes, such as learner with incompatible characteristics (age, physical strength, etc.), inappropriate training, or ineffective instructor, but feedback is one of the most important factors for all aspects of motor skill learning including CPR (Brennan, 1991; Brennan & Braslow, 1995; Sage, 1984; Shea et al., 1993). Considering the importance of feedback for acquisition of the CPR skills, the pre-test results can be interpreted as an absence or deficiency of sensory information (or task intrinsic feedback) for participants to determine the appropriateness of their actions. In the current study, CPR training sessions, even though offered without using any feedback devices, provided participants with a plenty of CPR related information, expected to enhance sensory feedback during post-test and improve CPR performance. However, according to the results obtained, all participants performed at lower proficiency levels. Schmidt and Lee indicated that during motor actions different sensory mechanisms provide performers with information regarding their movement (Schmidt & Lee, 2011). The performer receives intrinsic feedback from his/her muscles and joints during or after motor skill execution. Also the performer may feel, see or hear whether the movement was successful or not; and by using these sensory information he/she make necessary changes in the next attempt (Kerr, 1982; Sage, 1984). However, not all motor skills provide sufficient sensory information. Findings from this study highlight that, task intrinsic feedback during execution of CPR ventilation and compression skills are not easy to interpret. It is very hard for performers to feel or know if they are pushing down hard and fast enough during chest compressions, and or if they are exhaling enough air into victim's lungs. By using sensory feedback, a performer can reach a certain level of achievement, but attaining the highest levels of performance requires external sources of information. The knowledge of results provides learners with information about their success of skill performance or performance errors they made (Magill, 2001). Especially for complex skills, like CPR, augmented feedback is critical for skill learning, otherwise learners are likely to continue practicing same errors throughout training sessions if feedback is not provided (Magill, 2001). The findings of this study suggest that knowledge of results, as another source of information, is necessary and effective to support task-intrinsic feedback and improve CPR performance.

Another important finding of this study was that knowledge of results, provided by the Resusci Anne® SkillReporter™ manikin, has the potential to improve performance of previously mentioned CPR ventilation and compression skills. This finding is consistent with those of other studies and suggests that the providing knowledge of results to the learners

related to their performance is one of the most critical factors for CPR skill acquisition. After observing trainers` ignorance of ventilation and compression skill deficiencies most of the time and not offering any correction or feedback for these deficiencies during CPR training classes, Brennan and Braslow (1995, 1998) recommended that using equipment, such as manikins, sound devices, lights, provides better feedback on students' performance. There are also similarities between the positive effects of knowledge of results on CPR performance found in this study and those conducted by Spooner, et al., in which they found that students who acquired objective feedback from the manikin improved their CPR skills compared with students who received no feedback from the manikin; and Platt, who supported an effectiveness of computer auditory and computer visual feedback, rather than instructor-driven feedback, on CPR skill acquisition (Platt, 2008; Spooner et al., 2007). The systematic review of the effectiveness of CPR feedback/prompt devices in CPR skill acquisition by Yeung et al. (2009) also showed that use of feedback/prompt devices have positive effect on CPR skill acquisition and retention. The use of devices that provide immediate feedback to maintain skill acquisition during CPR training was also recommended in 2010 Resuscitation Guidelines by European Resuscitation Council (Nolan et al., 2010; Soar et al., 2010).

Additionally, the results of this study indicated that both female and male participants were unable to perform recommended chest compressions with sufficient depth (at least 5 cm). However, chest compression depth was significantly lower and chest compressions were shallow in female participants than in males. The relationship between CPR quality and sex of the performer has been investigated by several researchers (Greenstein et al., 2011; Reddy et al., 2011); and consistent with the current study findings, the outcomes of these studies demonstrated that, contrary to males, females` CPR performance, especially of chest compressions, were ineffective (Greenstein et al., 2011; Peberdy et al., 2009; Sayee & McCluskey, 2012).

Cardiac arrest is common cause of death in the world; and the effectiveness and quality of CPR are important for the survival of the cardiac arrest patient. Individuals that respond to emergencies should be competent for maximally effective CPR. Several studies have been conducted to discover better ways to enable people to acquire and apply CPR knowledge and skills when needed. In line with the literature, the findings of the current study acknowledged that knowledge of results, gathered from the Resusci Anne® SkillReporter™, related to improved participants' performance of CPR ventilation and compression skills significantly. The findings also revealed that manikin is effective to provide feedback and improve

ventilation and compression skills, and thus can be used in CPR training programs efficiently. In addition, study findings can be generalized and/or transferred to many other settings such as teaching sport skills, teaching driving different vehicles, or machines. Knowledge of results can be used effectively to enhance complex skills acquisition.

The findings of this study need to be interpreted in the context of two important limitations. First, the sample of the study was 1st year undergraduate university students majoring in physical education teaching program. Generalizability of the findings to the broader population of adults may not be evident. Second, the group assignment method that was used to create two homogenous groups (based on the pre-test scores) has some shortcomings. This purposive sampling method was actually preferred to construct identical groups in terms of sex and ventilation and compression skills (Fraenkel et al., 2012).

CPR is considered aerobic and intense exercise (Badaki-Makun et al., 2013; Van Hoeyweghen et al., 1991) and studies suggest that aerobic training or physical fitness activities may be beneficial in improving high quality CPR (Baubin et al., 1996; Lucia et al., 1999; Ock et al, 2011; Van Hoeyweghen et al., 1991). Although the current study did not ask specifically about participants' sport experiences, all students were required to pass the physical ability test to meet one of the requirements of PETE program. The students were also involved in wide range of sport activities in sport clubs and in PETE program. Accordingly, study participants' fitness level might be higher than sedentary individuals might and had an impact on ventilation and compression performance during pre-test and post-test. Thus, when interpreting results these issues should be considered.

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Effects of core stability on junior male soccer players' balance: randomized control trial

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Abstract

Despite the widespread popularity of the core stability trainings, research has not yet to establish specific guidelines that provide the most beneficial and deliberate protocols for young athletes. The aim of this study was to evaluate the effects of 8-week stable surface core stability training program on static and dynamic balance tasks with dominant and non-dominant foot stance among twelve-year-old soccer players. Fifteen of the soccer players were in the experimental group (Age=148.67±3.37 months, Height=154.19±9.43 cm, Weight=45.52±7.91 kg), 11 of them were (Age=145.73±3.84 months, Height=152.36±6.05 cm, Weight=45.19±7.85 kg) in the control group. Protocol was progressive as from static stable surface movements to dynamic stable surface exercises. Static and dynamic balance measured by Force Platform. Participants performed time-to-stabilization test for dynamic balance task. Averaged mean sway value in Anterio-Posterior and Medio-Lateral direction was used to evaluate unilateral static balance task. The effect of implemented program on dynamic and static balance performances were assessed by 2 x 2 univariate analysis of variance with repeated measures. Participating in soccer exercises improved dynamic balance for both dominant and non-dominant foot ($p<0.05$). Only significant interaction of implemented program and time was observed for dominant foot ($p<0.05$). However, no main effect of implemented program on dynamic balance performance for dominant and non-dominant foot and no implementation x time interaction for non-dominant foot were observed ($p>0.05$). Significant effect was observed for implementation in Medio-Lateral direction for dominant foot ($p<0.05$). We conclude that eight weeks stable surface core stability training might be added into exercise programs for improving stabilization after landing and static balance performance in specific directions among junior soccer players.

Keywords: Dynamic balance, static balance, core stability training, soccer, junior athletes

INTRODUCTION

The ability of stabilizing the core, which is defined as "to stabilize the body center against dynamic movements of the extremities and capability to absorb repetitive loading forces in the trunk" (Ezechieli et al., 2013), has critical function in any athletic performance. Initially, these type of exercises has been implemented only by physical therapists in the clinics to reduce back pain problems (Akuthota and Nadler, 2004; Alentorn-Geli et al., 2009; McGill, 2001; Van der Linden et al., 2013). However, core stability exercises have become very popular and these exercises are used by fitness instructors in fitness centers or strength and conditioning specialists in fitness clubs beside athletes in professional and amateur sport teams (Saeterbakken et al., 2011). Core Stability (CS) is essential for stabilizing the trunk in order to (a) provide support for movement patterns, (b) transfer forces and (c) reduce the energy leaking among limbs. This stabilization is defined as "neutral zone" which indicates minimal tension around the spinal segments (Panjabi, 1992a;1992b) and leads to better performance.

Kibler et al. (2006) indicated that "Core stability creates several advantages for integration of proximal and distal segments in generating and controlling forces to maximize athletic function." The importance of these functions in athletic performance is being increasingly recognized. Bliss and Teeple (2005) identified CS as the center piece of training programs, because of its' powerhouse and linking functions. Reed et al. (2012) highlighted that although core stability training (CST) implications resulted with improvements in aspects of general strength such as vertical jump and maximum squat load, generally out comes of various CST implications showed mixed results.

Soccer is one of the sports that CS plays crucial role as the environment during the game is ever-shifting and requires sudden postural responses and balance maintenance (Borghuis et al., 2011; Cholewicki et al., 2000). Reilly (2007) stated that agility and sprint are the most important criteria for developmental level soccer players. This has led to an emphasis of using core stabilization to improve control of core musculo-structure, which has role on rapid movement changes. Dawes and Roozen (2012), highlighted that level of control and strength of the core muscles will result with better movement patterns and performance, due to high neuromuscular control causing transfer of forces. Core stability is directly related to balance performance, as improving the control of core region of the body resulted with better dynamic balance in young athlete group (Sandrey and Mitzel, 2013). Considering this information, it is

important to investigate how to develop specific performance components, such as CS, in soccer game in order to increase total performance among young soccer players. Exercise methods for improving athletic performance or developing children´s various abilities are highly controversial issues in the current literature. It is well known fact that junior athletes are not younger versions of adults. For example; in relation with stabilization of the trunk and adjusting the posture, psoas major muscle is more developed in professional adult athletes than young athletes even when the difference in the total muscle mass of the body is adjusted (Kubo et al., 2010). Hence, age should be considered when planning program for improving athletic performance and advancing skills. There are different methods for improving athletic methods for young athletes.

As it was emphasized before, the mechanism of CS is related to mechanism of balance and postural stability (Cosio-Lima et al., 2003). Preuss and Fung (2008) highlighted that CS is one part of balance and postural stability. For improving functional compounds of performance such as balance, researchers have started to conduct studies on different exercise methods such as CS and balance trainings (Bliss and Teeple, 2005; Boccolini et al., 2013; Hirsch et al., 2003). Therefore, it is important to understand the effect of CST in order to improve balance performance. Nevertheless, despite the widespread popularity of these exercises, research has not yet to establish a set of specific guidelines that provide the most beneficial and deliberate CS exercises for young athletes. As a result, the aim of this study was to evaluate the effects of an 8-week stable surface CST Program on static and dynamic balance tasks with support and kicking leg stance conditions among twelve-year-old soccer players. We hypothesized that an 8-week CST implementation would cause (1) decrease time in stabilization of intervention group in comparison of control for dominant and non-dominant foot, (2) decrease mean sway values of intervention group in comparison of control for dominant and non-dominant foot in anterio-posterior (AP) direction and lastly (3) decrease mean sway values of intervention group in comparison of control in dominant and non-dominant foot in medio-lateral (ML) direction.

METHODS

Design of the Study

The focus of this study was to examine the effects of strength and conditioning techniques on young athletes. In this study, static and dynamic balance performances were measured. In order to assess balance, force platform measurements were used. Participants were selected

according to their age, similarities of soccer background and lack of injury. Pre-test Post-test Control Group Design was chosen to find more appropriate answers to the research questions of study, while eliminating the possibility of effectiveness of growth on athletic performance. The study was conducted after obtaining permissions of Ethical Board comity of the Middle East Technical University (28620816/83) and Gençlerbirligi Football Club. All participants, coaches and families of participants were informed about the procedure of the study. Only players who volunteered to participate and signed consent form included in the study. Parental consent forms were also obtained.

Research Group

At the beginning of the study intervention group consisted of 17 players and the control group was a total of 15 players. One player in the intervention group and one in the control group did not attend 80% of the exercises and was removed from the study. On the other hand, one player from intervention group and three players from control group were excluded from the study due to injury, which can affect the data collection procedure. As a result, the study completed with 12-year-old 26 soccer players. Fifteen of the soccer players were in the CST group (Age=148.67±3.37 months, Training Age=35.20±17.83 months, Height= 154.19±9.43 cm, Weight= 45.52±7.91 kg) and 11 of the soccer players (Age=145.73±3.84 months, Training Age=26.19±16.16 months, Height=152.36±6.05 cm, Weight=45.19±7.85 kg) were in the control group.

The soccer players were selected by purposive sampling method from the same soccer team in order to understand the effects of soccer training on balance. Participants were randomly assigned into two groups. Due to the, the school schedule one player, he was assigned to intervention group rather than the control. Both groups followed the same soccer-training program. The inclusion criteria of the study were: a) soccer background for at least 12 months, b) no previous injury prior to 6 months, c) no previous surgery on the lower extremity, d) lack of cardiovascular, vestibular, and neurological disorders, e) no previous background about instability problems. Club records were used to check these criteria, and interviews with coaches, parents and players were conducted.

Data Collection Instrument and Protocols

All participants attended two testing sessions (Pre-test and Post-test) in a research laboratory. The implementation of stable surface CST began within 1 week after the pre-test, and the

post-test was conducted within 1 week CST program. Participants warmed up for 5 minutes before measurements. Warm up protocol consisted of 2 minutes jogging followed by static and dynamic stretching movements. Attendance to CST protocol and regular soccer practice was recorded.

The subjects were measured between the same time gaps (12.00-15.00) of the day, with the same protocol and all data were collected by the same researcher. The height, weight, arm span, leg length, feet size, and hip width of the participants were measured (MTX, Xsens, Netherland) two times, before pre-test and post-test. Comprehensively, participants' body sizes (height hip width, leg length and foot length) were taken and warm up protocols were conducted. All participants wore the same clothes provided by the club during sessions and measurements. The height and the foot size of the participants were measured without shoes by using digital scale. During the data collection, participants were not allowed to wear any footwear in order to induce effect of footwear on balance (Burke, 2012). Data were collected by using 1m x 1m force plate (Custom made, Bertec Corporation, OH, USA).

Dynamic Balance Test

Participants performed time-to-stabilization (TTS) test for dynamic balance task. This protocol was used previously to detect performance developments (DiStefano et al., 2010; Ross and Guskiewicz, 2004). Sampling rate was set as 100 Hz. Participants stood on a 30 cm high platform placed half of their body height away from a force plate with their hands on their hips. They were requested to jump forward and land with dominant foot and non-dominant foot for 3 times. Researchers instructed participants prior to test, asked them to stabilize as quickly as possible and explained the purpose of this protocol. Participants who felt uncomfortable, hooped on the platform after first contact and lost balance during stabilization, they were asked to repeat the protocol until the full protocol was completed. Ten seconds time window was chosen to detect stabilization time according to previous methodological findings (Fransz et al., 2015).

Static Balance Test

Participants stood steady with one leg stance with open eyes on the center of Force platform for thirty seconds. If participant was unable to maintain this single limb static position with their hands on their hips or if a hoop occurred during test, trial was conducted again. During

open eyed unilateral balance test participants looked at the black point placed 3 meter away on the wall to maintain depth perception.

Data Reduction

Collected data from TTS and unilateral static balance test were transferred to MatLab (Version 2014a; MathWorks, Natick, MA, USA AP ground reaction force between the eighth and ninth seconds of single limb stance after landing were normalized to body weight (Ross et al., 2005) Yielded value used to determine a mean and standard deviation value for each component across trials. Unbounded third-order polynomial was rectified and placed on AP ground reaction force data. TTS for each component was identified as the point when polynomial fell below a specified threshold. All trials of each participant were averaged differently for each leg. AP calculation were taken into analysis as in both stable (DiStefano et al., 2010) and unstable (Cimadoro et al., 2013) dynamic stabilization tasks primarily involves muscles from the anteroposterior plane (Tia et al., 2011; Tia et al., 2012).

Static postural stability was examined with mean of absolute value of distance from AP and ML axis. The measurement used for assessing static balance had already been used in several studies (Golomer et al., 1999; Ross and Guskiewicz, 2004). Center of pressure (COP) mean sway in the AP and ML directions for bilateral stance was calculated. The AP and ML mean distance was defined as the average distance between the instantaneous AP or ML COP during 30 seconds.

Implementation of Core Stability Program

Exercise program lasted for 8-weeks, 2 days a week and 30 minutes a day. Totally 16 sessions were completed. Core stability training was held on Tuesdays and Thursdays every week at 15:45. Protocol was progressive as was suggested previously by Bliss and Teeple (2005) from static movements to dynamic movements and finally combination of these. CST was performed by intervention group as part of their regular soccer practice warm-up during implementation period. Core stability training protocol involved muscular activation of trunk muscles and consisted of Plank, Russian Twist, Shoulder Bridge, Side Plank, Leg Raise, Quadruped movements and performed in equal numbers or in seconds for both limb (Table 1). One of the researchers was responsible for supervising the CST implementation and providing feedback and corrections to junior soccer players. On the other hand, control group performed their regular warm-up protocol.

Table 1. Progression of exercise program

Weeks	Plank	Russian Twist	Shoulder Bridge	Side Plank	Leg raise	Quadruped
1.Week	3x10 sec static	3x10 reps	3x10 reps			
2.Week	3x15 sec static	3x10 reps	3x15 reps	3x10 sec static	3x10 reps	
3.Week	4x15 sec Static	4x15 reps	3x20 reps + 10 sec static	3x10 sec static	3x10 reps	3x20 sec static
4.Week	3x20 sec static	3x20 reps	3x20 reps + 10 sec static	3x15 sec static	4x10 reps	3x20 sec static
5.Week	4x20 sec static	4x20 reps	3x20 reps + 15 sec static	4x10 sec static	3x15 reps	4x20reps
6.Week		3x20 reps + 10 sec static	3x20 reps +15 sec static	3x15 reps +5 sec static	4x10 reps + 10 sec static	4x20 reps
7. Week		3x20 reps + 10 sec static	3x25 reps + 15 sec static	3x15 reps + 10 sec. static	4x15 reps + 10 sec static	4x25 reps + 10 sec static
8.Week		4x20 reps + 10 sec static	3x25 reps + 15 sec static	3x15 reps + 10 sec. static	4x10 reps + 15 sec static	4x20 reps + 20 sec static

Data Analyses

2 x 2 (Group x Time) univariate analysis of variance with repeated measures was used to test the effects of CST on dynamic balance performance. The impact of CST on static balance in AP and ML directions were tested with univariate analysis of variance (2 x 2) with training program as the "between-subject factor and" time as "the repeated measures factor". The data were analyzed using SPSS Statistics 20.0 (SPSS Inc., Chicago, IL), and the significance level was set at $p < 0.05$.

RESULTS

Univariate Anova was performed to test the initial differences in TTS and results indicated non-significant differences in pre-test dynamic stabilization times for dominant ($F_{(1,24)}=3.352$, $p=0.080$) and non-dominant foot ($F_{(1,24)}=3.897$, $p=0.060$) between CST and control groups. The analysis revealed no significant univariate main effect of group for dominant in AP ($F_{(1, 24)}=0.008$, $p=0.930$) and ML ($F_{(1, 24)}=2.819$, $p=0.106$) directions. The analysis revealed non-significant univariate main effect of group for non-dominant in AP ($F_{(1, 24)}= 0.431$, $p=0.518$) and ML ($F_{(1, 24)}=0.856$, $p= 0.774$) directions.

For TTS in dominant foot a 2 × 2 (CST × Time) Anova showed a significant main effect for time ($F_{(1,24)}=13.318$, $p=0.001$, $eta^2=0.357$, power=0.938) but not for CST ($F_{(1,24)}=0.397$, $p=0.535$). A significant CST by time interaction effect ($F_{(3,24)}=8.461$, $p=0.008$, $eta^2=0.026$,

power=0.797) indicated that participants in the CST group decreased in TTS more than participants in the control group. Moreover, for TTS in non-dominant foot, a 2 × 2 (CST × Time) Anova showed a significant main effect for time ($F_{(1,24)}$=35.285; p=0.000, eta^2=0.600, power=1.000) but not for CST ($F_{(1,24)}$=2.332, p=0.140). Anova results showed a non-significant CST by time interaction effect ($F_{(3,24)}$=3.473, p= 0.126) for non-dominant foot. Participants in CST and control groups developments for dominant and non-dominant foot over 8-weeks demonstrated in Figure 1.

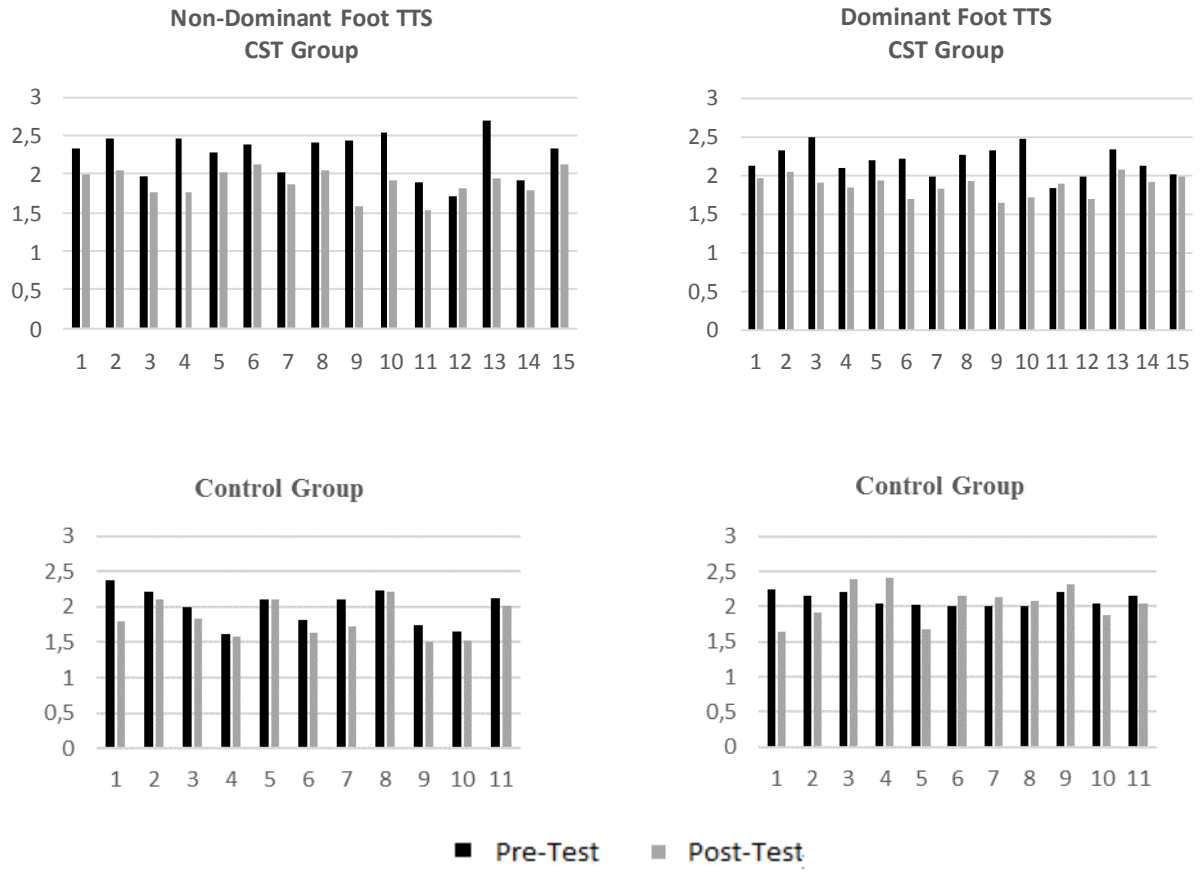

Figure 1. TTS dynamic balance test results of cst and control groups based on individuals

For static balance measurements with dominant foot, univariate Anova testing of COP in AP showed non-significant main effect for time ($F_{(1,24)}$=1.797, p= 0.193), CST ($F_{(1,24)}$=0.041, p=0.952) and interaction effect between time and CST ($F_{(1,24)}$=0.011, p=0.916). For ML direction CST main effect was observed ($F_{(1,24)}$=6.523, p=0.017, eta^2=0.214, power=0.689) which indicates that both group increased mean sway of their dominant foot in ML, however CST group increased less than control. However, there were no significant main effect of time ($F_{(1,24)}$=0.501, p=0.484) and interaction effect between time and CST ($F_{(1,24)}$=0.515, p=0.480) for dominant foot in ML direction.

For static balance measurements with non-dominant foot, univariate Anova testing of COP in AP direction, showed non-significant main effect for time ($F_{(1,24)}$=2.321, p=0.140), CST ($F_{(1,24)}$=1.353, p=0.256) and interaction effect between time and CST ($F_{(1,24)}$=0.474, p=0.498). Similarly, there were no any significant main effect of time ($F_{(1,24)}$=0.552, p=0.463), CST ($F_{(1,24)}$=0.644, p=0.432) and interaction effect of time x CST ($F_{(1,24)}$= .485, p=0.235) were observed in ML direction. Descriptive statistics of static measurements were shown in Table 2.

Table 2. Descriptive statistics of static measurements

Variable	Mean±SD			
	CST Group		Control Group	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Dominant AP	16.81±15.74	13.80±12.44	16.32±11.29	13.75±7.77
Dominant ML	29.24±23.35	29.19±26.09	49.98±39.52	59.58±33.90
Non-Dominant AP	26.67±30.36	40.25±35.55	19.83±19.04	24.97±21.79
Non-Dominant ML	34.24±19.40	35.76±22.86	31.99±19.55	25.67±22.03

DISCUSSION

Core stability training is heterogeneous term; literature indicates studies represents a diverse range of movements, intervention styles and target population. Most of the CS studies conducted on athletic performance are focused on mature athletes. Although the importance of CS in athletic performance is being increasingly recognized, there are inconsistencies about optimal exercise protocols and methodologies through which CS have effective impact on junior athletes. Some of the studies demonstrated positive significant effects of CST on strength (Myer et al., 2008; Szymanki et al., 2010; Trzaskoma et al., 2010), vertical jump performance (Myer et al., 2006), static balance performance (Filipa et al., 2010; Aggarwal et al., 2010) among various populations. On the other hand, different studies indicated no effect of CST on various outcomes such as CS (Lust et al., 2009), flexor endurance test (Tse et al., 2005), dynamic balance measured by single leg hop (Aggarwal et al., 2010). Thus, the response to the applied combination of exercise type, intensity could be different, causing controversial issues related to applications. As previously emphasized by Cosio-Lima et al. (2003) the mechanism of CS is related to mechanism of balance and postural stability. The purpose of the study was to determine whether an 8-week CST training program in soccer

would affect static and dynamic balance testing. In order to decrease the individual differences in the subjects, all subjects were grouped according to the morphological characteristics and pre-test performances. Prior to CST implementation, both the CST and control groups demonstrated similar performances in all measured variables.

The first hypothesis of this study was partially confirmed. The results for dynamic balance test showed that participation in soccer improves dynamic balance for both dominant and non-dominant foot which corroborates with previous research (Cug et al., 2015) implemented Star Excursion Balance Test (SEBT). They showed soccer players have significantly better dynamic balance performance in posterio-medial direction. However, sedentary control group indicated better balance performance in AP direction. Moreover, their findings support that athletic background has a direction-specific impact on dynamic stability but this might be test dependent. Bressel et al. (2007) also implemented SEBT and they highlighted that soccer players have similar balance performance with gymnasts. They suggested that unique sensorimotor challenges are imposed by soccer practice. Soccer players perform single-leg stance to reach ball for passing and shooting actions. These sensorimotor challenges have positive effect on balance performance. Participating in exercises that improves neuromuscular coordination (Paterno et al., 2004) and proprioception (Lephart et al., 1996) are also possible mechanisms that lead to decrease in stabilization time after landing in young soccer players.

The interaction between time and CST was observed for only dominant foot. Firstly, this side to side (dominant and non-dominant) differences were explained by Heitkamp et al. (2001) in relation to the gains in strength and muscular imbalances caused by balance training. Although their study conducted on mature trained participants, results of this study indicates that the same mechanism could be effectual on junior soccer players. On the other hand, the results of this study indicated that there was no main CST effect on stabilization time for both dominant and non-dominant limbs. Contrary to results of this study, Filipa et al. (2010) used SEBT as outcome measure and found that 14-15 years old female soccer players improved their balance score after 8-week neuromuscular and CST. However, force platform measurements have been considered the ‘‘gold standard’’ for measuring static balance (Riemann et al., 1999). It was previously suggested that the performance improvements in SEBT is not caused by strength or CS improvements but, rather knee and hip flexion improvements. However, Myer et al. (2006), suggested that trainings methods for improving balance are important to improve force attenuation strategies when landing from a single leg

hop. Finally, soccer training decreased landing force for both groups and this resulted in better stabilization time. Core stability training group decreased landing force more with combination of soccer drills, when compared with the control group for dominant foot but not for non-dominant foot.

Our findings did not support the second and third hypothesis that there would be a difference between the two groups in decreasing mean sway values in AP and ML directions. Both groups slightly decreased their mean sway values during unilateral balance test for dominant foot in AP direction. On the contrary, control group increased their mean sway, while CST groups mean sway value remained almost the same with pre-test values. On the other hand, there were increase in mean sway was observed in AP direction for both groups for non-dominant foot. Lastly, for non-dominant foot CST groups mean sway value remained almost the same in ML direction and control group slightly decreased mean sway values. A possible explanation of diverse progression patterns for dominant and non-dominant limbs could be attributed to Heitkamp et al. (2001) gains in strength and muscular imbalances caused by balance training. Another possible explanation may be the changes in postural control during adolescence. Adolescents develop at different rates in relation to biological age and development of the visual, vestibular, and somatosensory systems may account for age-related changes in balance control (Nolan et al., 2005). It has been previously reported that some aspects of postural control are still developing after 10 years of age (Nolan et al., 2005). Moreover, Viel et al. (2009) suggested that the mechanisms underlying postural control are still developing during adolescence, which is possibly caused by a transitory period of proprioceptive neglect in sensory integration of postural control.

The only significant main effect was observed for CST on static balance for dominant foot stance in ML direction. Descriptive statistics indicated that both group increased their mean sway values but mean value of CST group were significantly less compared to controls. Considering this change, Myer et al. (2008) employed 10-weeks training focused on neuromuscular development of the core region in high-school volleyball athletes and they suggested gaining strength in focused part of the body may improve the ability of female athletes to increase control of lower limb alignment and decrease motion and loads resulting from increased trunk displacement in athletic performance. Drinkwater et al. (2007) examined the effects of surface stability on muscle performance during a squat exercise with different loads. On the contrary, to this study, they used unstable platforms, which decreased measures of concentric force, velocity and power, in addition to squat depth and eccentric power. They

concluded that training on an unstable surface promotes CS and balance. Lee and Han (2016) examined the effects of 10-week complex core balance training on isokinetic muscle functions of the knee and lumbus. The exercises they employed were very similar to exercises used in this study. The authors concluded that complex core balance training improved the isokinetic muscle function of the knee and lumbus in throwing performance.

CONCLUSIONS

This study has some methodological limitations. The primary limitations of the current study included a small sample size and limited generalizability of results. Secondly, despite the non-significant differences between some of the results, soccer players in the CST group showed beneficial improvements after the CST program. We conclude that implemented CST in addition to regular soccer practices and focused on core region strength and stability significantly improved dynamic balance for dominant and static balance in ML direction for non-dominant foot in junior male soccer players.

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Why people participate leisure time physical activity: a Turkish perspective

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Abstract

This study was conducted for the assessment of why people participate leisure time physical activity and examine the differences in participation motives with regard to some demographic variables. Simple random sampling method was used in this study. The sample consisted of 146 female (Mage = 21.60 ± 2.01) and 167 male (Mage = 22.23 ± 2.21) randomly selected voluntary university students from different state universities in Ankara. In this study, the Personal Demographic Information Form (PDIF) and "Measure of Recreational Exercise Motivation (REMM)" scale (Roger and Morris, 2003) that adapted in to Turkish "The Physical Activity and Leisure Motivation Scale (PALMS)" by Aşçı et al. (2012) was administered on the participants. PALMS scale consisted of 34 items and following 8 subscales: (a) Mastery, (b) Physical condition, (c) Social relation, (d) Psychological condition, (e) Appearance, (f) Others' expectations, (g) Enjoyment, (h) Competition. Descriptive statistics, MANOVA, and Pearson Correlation analysis were used to analyze the collected data. As a result MANOVA analysis indicated overall significant main effect of gender and frequency of exercise participation on "PALMS" scores. Furthermore, analysis indicated a significant and positive relationship between age and subscales of "Others' Expectations" of the "PALMS". Overall, the descriptive analysis showed that "Physical Condition" regarded as the most important factors that motive to exercise participation. The "Others' Expectation" was the least important motive.

Keywords: Recreation, physical activity, leisure participation, motivation

INTRODUCTION

Recreation refers to psychological and physical renewal of participants, and makes them relaxed, refreshed, and enables to cope with mediocrity and challenges by providing the lifestyle varieties (Jensen and Naylor, 1999). Besides, recreation experiences create opportunities to seek out various psychological, physical and social benefits which effect participants' quality of life and life satisfaction (Malanorouzi et al., 2014; Küçükkılıç et al., 2013; Stumbo and Peterson, 2004). In addition, as we already know that regular leisure time physical activities have many benefits for increasing physiological and psychological wellbeing (Kilpatrick et al., 2010; Kimball and Freysinger, 2003; Zuzanek et al., 1998). According to Paterson and Stumbo (2004), these benefits are as follows; reduce the many health problems such as high blood pressure and heart disease; gain the strength towards life situations that effect the life negatively like smoking and obesity; develop the skills to prevent, manage and cope with stress; and provide increasing the opportunity self-knowledge, self-discovery and self-realization.

Although, there is plenty of study in the literature which were indicated the benefits of participation in physical activity on health and fitness (Hamer et al., 2002), most of the people in the world don't participate physical activity in recommended level (Rhodes and Dean, 2009; Güngörmüş, 2007). Therefore, it is important to understand reasons which lead the individuals to physical activity (Gürbüz and Henderson, 2014; Rogers and Morris, 2003). Because of the uncertainty of the valid reasons for participation, often directs researchers to ask "Why do people participate?," "Why do people not participate?" or "What encourages people to participate?" (Kim et al., 2011). The answers to these questions have explained in the literature with the "motivation" concept.

The term "motivation" was originally derived from the Latin word "movere", which means "to move" (Steers and Porter, 1987), and it is defined as "process of creating a behavior in the organism through incentives" (Doğan, 2005). Leisure motivation has been defined as "a need, reason, or satisfaction that stimulates involvement in a leisure activity" in 1980 by early pioneer Crandall (Cited by Chen and Pang, 2012). Ryan and Deci (2000) has been defined the leisure motivation has been defined as a self-determined construct. This construct was divided into three categories: intrinsic, extrinsic, and amotivation.

Intrinsic motivation is defined as the tendency to find out new challenges, bear down someone to his/her true capacity, explore, and learn. *Extrinsic* motivation is defined as the ability to perform in an activity and acquire a separable outcome and finally *Amotivation* is defined as the inability or reluctance to participate in leisure activity (Beggs et al., 2014).

Ryan and Deci (2000) underlined that motivation concept is directed positively to human life or is fulfilled basic psychological needs of individuals, can facilitate both enhanced human achievements and well-being. This determination of Ryan and Deci makes quite clear that why motivation concept is frequently used in the sport psychology and recreation psychology literature (Mutlu, et al., 2011). For example; Carroll and Alexandris (1997) indicated importance of motivation to overcome the leisure constraints and find out positive relationship between the participation frequency and motivation level of sample and Lavarie (1998) emphasized that motivators to leisure physical activity are varying among the consumers like healthy aging, weight control, avoiding the stress, having a good time, meeting the new people. As you see that besides the importance of the leisure physical activity, understanding the leisure motivators too important because it is recognized that there are a lots of reasons for someone participating, or not participating in leisure activities (Fawcett et al., 2016).

Despite of the importance of the leisure activity participation motivators, we can say that the researchers give study short shrift about the leisure (Gürbüz and Henderson; 2013) and specially leisure participation motivators in Turkey (Emir et al., 2014). But it is obviously important to make clear the motivators that lead to people leisure physical activity with variety of leisure studies. Therefore, this study was conducted for the assessing why people participate leisure time physical activity and examine the differences in participation motives with regard to some demographic variables.

MATERIAL and METHOD

The purpose of this descriptive study was to assess the motivators of leisure time physical activity of university students and examine the differences in participation motives according to the some demographic variables.

Participants

Simple random sampling method was used in this study. The participants of this descriptive research consisted of 146 female (M_{age} = 21.60 ± 2.01) and 167 male (M_{age} = 22.23 ± 2.21) university students were randomly selected from 3 different state universities in Ankara. Voluntary university students in the sample were from different faculty, gender, income, age, profession and leisure activity participation frequency.

Data Collection Instrument

In this study, the Personal Demographic Information Form (PDIF) and "Measure of Recreational Exercise Motivation (REMM)" scale (Roger and Morris, 2003) short version was adapted in to Turkish "The Physical Activity and Leisure Motivation Scale (PALMS)" by Aşçı et al. (2012) was administered on the participants. The PDIF was developed in order to learn about some demographic variables of participants like age, gender, participation frequency. PALMS scale consisted of 34 items and following 8 subscales: (a) Mastery 4 items, (b) Physical condition 4 items, (c) Social relation 5 items, (d) Psychological condition 4 items, (e) Appearance 4 items, (f) Others' expectations 3 items, (g) Enjoyment 5 items, (h) Competition 5 items. All items were measured and sorted using a five-point Likert scale "strongly disagree" to "strongly agree".

Data Collection Procedure

This research was conducted in 2014-2015 academic calendar. The PALMS was administrated to participants in their leisure activity settings especially before the leisure activity period. Incomplete inventories were eliminated from the study. In overall, the data were analyzed for the 313 inventories that were returned from the participants.

Statistical Analysis

The descriptive statistical methods were used in the analyses of the demographic variables; percentage, mean and standard deviation. In order to determine the main effect of gender on the subscales of PALMS MANOVA test, and to analyze relationship between age and PALMS subscales Pearson Correlation analysis were used. Cronbach's alphas were calculated for the subscales in order to evaluate their internal consistency. Cronbach's alpha value for 313 participants was changing between (α): 0.62 – 0.92 for this study. Reliability coefficients is providing the information for internal consistency. In this study internal consistency of 8 sub-dimensions was excellent or just over the questionable level.

RESULTS

The participants of this study were 146 female and 167 male voluntary university students whose ages were changed between 18 years old and 31 years old and their main age 21.60 ± 2.01 for female and 22.23 ± 2.21 for males respectively. Most of the participants were 4th class students (% 46.6) and 181 participants (%57.8) were participated leisure time physical activity "sometimes". Finally, their physical activity preferences were vary between individual activities (%61.3) and group activities (38.7).

Distribution of scale score results of the sub dimensions of PALMS is illustrated in Table 1.

Table 1. Distribution of scale score

Dimensions	Number of Items	N	Mean	Sd
Mastery	4	313	3.74	0.92
Physical condition	4	313	4.28	0.96
Social relation	5	313	3.26	0.99
Psychological condition	4	313	3.94	0.95
Appearance	4	313	3.73	0.95
Others' expectations	3	313	2.75	1.01
Enjoyment	5	313	3.72	0.82
Competition	5	313	3.13	1.06

According to the results of descriptive statistics, the top rated dimension was the psychological condition (M=3.94) and the low rated dimension was the others' expectations (M=2.75).

The main effects of gender on the subscales of PALMS was tested by MANOVA and results is presented in Table 2.

Table 2. Distribution of scale score by gender

Dimensions	Female (N=146)		Male (N=167)	
	M	***Sd***	***M***	***Sd***
Mastery	3.74	0.91	3.78	0.93
Physical condition	4.13	0.90	4.05	1.02
Social relation	3.15	1.04	3.36	0.94
Psychological condition	4.02	0.96	3.86	0.94
Appearance	3.60	0.97	3.84	0.93
Others' expectations	2.65	0.97	2.84	1.04
Enjoyment	3.74	0.77	3.69	0.86
Competition	2.92	1.07	3.31	1.02

MANOVA analysis indicated overall significant main effect of gender on the subscales of PALMS [λ=0.907, F(8, 304)=3.912, p<0.01]. A follow-up univariate analysis indicated significant main effects for gender on the subscales of "Appearance" [F(1, 311)=4.466, p<0.05] and "Competition" [F(1, 311)=10.752, p<0.01]. The mean scores of male participants were higher than the females. MANOVA indicated significant main effect of frequency of exercise participation on "PALMS" scores [λ=0.815, F(8, 304)=2.384, p<0.05].

The effects of participation frequency on the subscales of PALMS was illustrated in Table 3.

Table 3. Participation rate by variable frequency distribution of scale

Dimensions	Rare (N=53)		Sometimes (N=181)		Often (N=79)	
	M	***Sd***	***M***	***Sd***	***M***	***Sd***
Mastery	3.41	0.97	3.65	0.88	4.17	0.88
Physical condition	3.89	1.02	3.99	0.96	4.43	0.86
Social relation	3.14	1.15	3.21	0.96	3.46	0.93
Psychological condition	3.74	1.00	3.83	0.97	4.30	0.78
Appearance	3.45	1.01	3.63	0.94	4.16	0.80
Others' expectations	2.66	1.10	2.71	0.96	2.91	1.06
Enjoyment	3.45	0.87	3.67	0.81	4.00	0.72
Competition	2.81	1.21	3.07	0.97	3.48	1.06

According to the results of frequency of exercise participation also revealed a significant differences in the "Mastery" [F(2, 310)=13.808, p<0.01], "Physical Condition" [F(2, 310)=7.424, p<0.01], "Psychological Condition" [F(2, 310)=8.299 p<0.01], "Appearance"

[F(2, 310)=11.953, p<0.01], “Enjoyment” [F(2, 310)=8.257, p<0.01] and “Competition” [F(2, 310)=7.396, p<0.01] subscales. As the frequency of exercise participation increased the mean scores increased.

DISCUSSION and CONCLUSION

In the leisure literature findings of some studies showed that young people and university students participate less to leisure activities (Beulac et al., 2010; Kilpatrick, 2010). That’s why the purpose of this study was to assess the why university students participate leisure time physical activity and to examine the differences in participation motives with regard to some demographic variables.

Overall, the descriptive analysis showed that “Physical Condition” regarded as the most important factors that motive to physical activity participation. The “Others’ Expectation” was the least important motive (Table 1). In the Thesleffs’ (2014) study with dance students, "Enjoyment", "Mastery" and "Psychological Condition" dimensions were the top important motive factors, was determined. In this case, participants of the present study did not need to motive for a good performance like the Thesleffs’ (2014) participants, so we can say that motives to physical activity can be changed by person to person and their purpose.

MANOVA and following univariate analysis indicated significant differences between the genders (Table 2). Male had higher scores on the subscales of “Appearance” [F(1, 311)=4.466, p<0.05] and “Competition” [F(1, 311)=10.752, p<0.01] dimensions. Koivula (1999) established same results with our study. She found out that “competition” was more motivating factor in participation physical activity for male when compared female. Likewise, Kilpatrick et al. (2010) were determined that male were more highly motivated by performance and ego-related factors, such as strength and endurance and competition then the female. According to our findings and literature, we can say that “competition” dimension is strong motivator in participating physical activity especially for male.

According to frequency of exercise participation results also revealed significant differences except “social relation” and “others’ expectations” dimensions and the frequency of exercise participation increased the mean scores increased (Table 3). We can explain this situation by Chiu’s (2009) point of view; motivation is accepted as an important determinant for behavior. In leisure settings motivation for leisure physical activity is recognized the largest contributor

to the frequency and magnitude of participation. So that participation frequency is a result of motivation level and can create some differences in motivation dimensions. In addition, Emir et al. (2013) indicated that positive relationship between frequency of participation and motivation. When frequency of participation was increased, motivation points were increased.

Frequency of participation also effects moderately and highly involvement in a physical activity (Kyle et al., 2004) and loyalty to leisure sport centers (Bodet, 2012). These findings are important for companies working in this sector. So, we can say that to increase the participation frequency is important element for recreation service sector. Therefore, companies working in this sector should pay special attention to leisure participation motives, involvement and loyalty issues.

As a result, this descriptive research was showed that "physical condition" and "physiological condition" dimensions were the most important motivators for university students to participate the leisure physical activities and "mastery" and "enjoyment" dimensions were followed these dimensions. The same results were valid for the gender. This means physical wellbeing and physiological wellbeing is important for the physical activity participants. Literature for sport and leisure studies mostly indicated that physical activity participation has positive effect on physical and physiological wellbeing (Güngörmüş et al., 2014; Aaltonen et al., 2012; Çağlar et al., 2009). So, we can say that our findings is consistent with literature and this findings are also beneficial for leisure activity centers and organizations managers to organize their services.

Besides the findings we have to state that a methodological limitation of this study was that the sample size was relatively small and the entire sample was selected from only university students. Despite the sample limitations, this study provided some additional information to recreation literature. Future studies might be conducted with the participants from different exercise participation environments and promoted with qualitative studies to get the answer to the question "why people participate".

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The evaluating of service quality in recreational sport events: kite festival sample

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Abstract

Providing a high quality service is what the recreational and sports facilities wish to achieve. Offering a quality experience to the recreational and sport consumers promote the participation in recreational and sport activities and the consumption of these activities in future. It is accordingly considered to be important that the quality of the offered service is known by recreational and sport marketers and service providers. The service quality of the recreational kite festival was evaluated in this research. The Scale of Event Quality for Spectator Sports (SEQSS) developed by Ko et all. (2011) was used to evaluate the service quality. 325 people who watched the contests and activities within the festival and were chosen with the convenience sampling method joined the research. It was understood from research results that the service quality of the kite festival did not differ according to genders and age groups of the participants. It was determined that individuals with different income levels had different perceptions for the factors affecting the service quality. It was also found that the postgraduate participants had the lowest average for all of the dimensions that affected the service quality of the kite festival.

Keywords: Recreation, event, kite, sport kite, service quality

INTRODUCTION

Kite is the general name for the objects that can hang in the air as a result of the interaction between the force created by the surfaces of light material in the ascending direction that creates drag against the wind and the force created by the rope they are linked to (Wikipedia, 2014a). It is stated that the first kite was made by the Chinese philosopher Mozi who lived the years between 478-392 BC in China. It is said that Mozi made the first kite of China and the world by inspiring from a hawk flying in the sky (Xiaoyu, 1996). Some resources state that the kite has a history of 2000 years and first designed in China and Malaysia (Singla et al., 2009). It is also said that Italian Marco Polo played an important role in that the kite was carried to the West. When Marco Polo came back from China in 13rd century, kites started to get popular. It is stated that kite came to America with European immigrants after Christopher Columbus explored the new continent (Xiaoyu, 1996).

Kites have been used in different cultures and societies for various purposes (Singla et al., 2009; Wankhede and Sariya, 2006; Wankhede and Sariya, 2008; Xiaoyu, 1996). For example, kites were used as a tool of war, communication and reconnaissance in the ancient times (Xiaoyu, 1996). The Chinese used kites to lift their spies up in the air to identify the enemy zones (Singla et al., 2009). In addition, kites were used as a weapon that carries gunpowder (Xiaoyu, 1996). Different uses of the kite are mentioned in the literature other than its military purposes. It is known that the Japanese fly colorful kites in the shape of carp because they believe it is good luck while fishermen fly kites to catch fish in New Zealand. In many Asian countries, farmers fly kites to scare the birds that eat their crops (Singla et al., 2009). It is stated that kites are used in scientific experiments and weather forecasts rather as a meteorological tool in Europe and America. They have been used by different scientist especially to invent things for the benefit of humankind (Xiaoyu, 1996).

It is mentioned that kites were also used as a recreational instrument in the past (Xiaoyu, 1996). In the Tang Dynasty ruled in China between 618 and 906 (Baykuzu, 2006), a series of precautions was taken to minimize the conflict between classes and maintain the social order, and the economy and the production were improved to lighten people's burden. This action is said to have brought a quick comfort and peace. As a result, the economic development and the social balance increased the popularity of various festivals that also helped cultural and recreational activities develop. Therefore, kites that had been used for military purposes started to be a recreational tool (Xiaoyu, 1996).

Kiting stands out as a popular recreational sport especially among children and young adults in many cultures now (Mehmood et al., 2010; Twari and Sharma, 1999; Wankhede and Sariya, 2006). Kiting is a great hobby and sport that brings challenge, excitement and cooperation to the participants (Skinner, 2004). Sport Kite is performed with a kite that can be maneuvered in the air. It is said that the development multi-line kites has turned the ways of flying kite into a sport in recent years. The contests of kiting share many common characteristics with figure skating in which the music is interpreted artistically and the performance of compulsory figures are evaluated by judges. Performances are conducted individually, in pairs or as a team. It is said that the contests of teams that are composed of eight people at maximum are the most watched contest class (Wikipedia, 2014b). Sport Kite has become a discipline for which a world championship is organized by institutions operating in different parts of the world such as American Kitefliers Association (AKA), Sport Team and Competitive Kiting (STACK) and All Japan Sport Kite Association (AJSKA) (WSKC, 2014). The kitefliers compete in the disciplines of precision and ballet in the World Sport Kite Championship. Precision is composed of the compulsory and technical moves that test contestant's technical skills. Bale (ballet) requires the interpretation of the music (International Sport Kite Rules Book, 2009).

Different types of Sport Kite tournaments are organized. There are also organizations of "kite fighting" in some countries such as India, Pakistan, Afghanistan, Bangladesh and Brazil (Sariya, 2008; Wankhede and). At these tournaments, participants use an abrasive or cutting material on their ropes to cut the rope of competitor's kite. The goal is to cut the rope of the kite and make the competitor go out of play (Singla et al., 2009).

Kites are also used in water sports. The discipline in which kites are used in water sports is called "kitesurfing". Kitesurfing has recently been drawing attention as an outdoor recreational sport trend (Exadaktylos et al., 2005; Ziegler et al., 2009).

The kite has its functions in the folklore, art and economy beside its function as a recreational sport activity (Zhang et all., 2007). It can be said that kiting has become an international activity for which festivals are organized in certain areas (Xiaoyu, 1996). Today, kiting is a recreational activity of which festivals are held in many countries such as USA, Canada, China, Singapore, India, Pakistan, UK, Germany, France, the Netherlands and Turkey (Mehmood et al., 2010; Tiwari and Sharma, 1999; Xiaoyu, 1996;). Washington Kite Festival was considered to be one of the best activities in USA in 2011 (Top Events USA, 2014).

The number of festivals has been increasing across the world (Kim et al., 2014). It can be observed that their number and diversity has been increasing day by day (Yoon et al., 2010). Kite festivals are one of the festivals that are traditionally organized with community participation each year (Giovanardi, 2011). One of the main reasons for this numerical increase is its contribution to the regional economy (Yoon et al., 2010). It is thought to be providing locals with extra income and occupation. Still, it may not be true only to focus on its economic aspect. The festivals are capable of providing the host community, the organizers and the participants with many perks. They also offer individuals the opportunity to socialize and interact with each other (Kim et al., 2014).

A "Kite Festival" has been organized by Anadolu University Faculty of Sport Sciences for primary, secondary and high school students and people of different age groups in Eskişehir since 2004. This kite festival is an organization that covers augment services such as various contests, stage performances and games and is held in May each year with the contributions of sponsors. Public institutions such as Anadolu University aim to offer an alternative activity that can meet individuals' physical and socio-cultural needs by organizing a recreational kite festival. It can also be said that the kite festival creates opportunities for locals to acquire economic gains.

The festivals have important effects on local economies and provide locals with great benefits. This is considered to be the reason why the number and diversity of the festivals have increased dramatically. It is known that communities organize several festivals to improve the local tourism and for its economic benefits (Yoon et al., 2010) Festivals are also good examples for sustainable touristic practices (McKercher et al., 2006). Providing a quality service is a basic strategy for sustaining and succeeding in an organization in today's competitive environment. The ability to render a quality service provides an advantage for creating a more successful organization (Chuan, 2008). Therefore, it is important to evaluate the service quality. Within this context, it is critical to be able to evaluate the service quality to maintain the recreational organizations. Evaluating the service quality of recreational organizations is thought to provide the sponsor firms, the organizers and the service provider stakeholders of the activity with importance feedbacks. Accordingly, the aim of this research is to evaluate the service quality of the recreational kite festival.

Literature Review

Research on the service quality in the recreational and sport industry is conducted under the topics of spectator and participating recreational and sport services (Theodorakis and Alexandris, 2008). In the literature review, there was an effort to create a corporate framework related to the dimensions frequently used in the scales utilized for evaluating the service quality in spectator recreations and sports.

The service quality has been measured in the area of sports and recreations for over 20 years (Perez et al., 2010; Theodorakis et al., 2011). With the increase of the competition at recreational and sport facilities, researchers and service providers have been attaching more importance to customer satisfaction and service quality (Ko, 2000). According to Ceylan et al. (2010), the reason why this issue is emphasized is to identify the importance attached by the consumers to the quality in their service preferences.

When the literature is reviewed, the model which has been utilized most for the measures of service quality in various service industries (Pollack, 2008; Shonk, 2006; Thwaites and Chadwick, 2005) is the SERVQUAL developed by Parasuraman et al. (1985). The SERVQUAL is a popular scale that measures the service quality (Lam et al., 2005). No total agreement can be mentioned among researchers who examine the service quality in the recreational and sport industry about which dimensions identify the structure best (Kyle et al. (2010). Most of the scales used to measure the service quality in the recreational and sport industry have been utilized the original SERVQUAL scale and its dimensions in their development stage as a basis (Theodorakis and Alexandris, 2008). However, Ott (2008) stated that the SERVQUAL model used in the recreational and sport industry fall short in this field and additional research is needed for this model. He also added that this cause researchers to focus on the specific service quality elements, dimensions and developing factors of the sport and recreational industry. According to him, adaptation studies have been conducted on the old models and new instruments have been developed to measure the service quality in the recreational and sport industry as a result.

There are various factors or dimensions affecting customers' process of evaluating the service quality. However, there is no complete agreement about what these dimensions really are. The most important reason why there is no consensus among researchers is considered to be the fact that the dimensions constituting the service quality differ according to various sectors (Okumus and Duygun, 2008). When the literature about the service quality measures in the

recreational and sport industry is reviewed, the measures of service quality are classified under spectator and participating recreational sports. It is seen that there are different dimensions in the service quality measures of both classifications (Ko et al., 2011; Theodorakis and Alexandris, 2008; Yıldız, 2012).

According to Perez et al. (2010), the quality of recreational and sport services is one of the factors that determine the development of a business. Therefore, it is necessary to know the dimensions of service quality to analyze the quality and develop the accuracy and productivity of the service. When the scales developed to evaluate the quality of spectator recreational and sport services are examined within this context, the result and environment dimensions are referred in different scales as the dimensions affecting the service quality (Brady and Cronin, 2001; Kelley and Turley, 2001; Ko et al., 2011; Kuenzel and Yassim, 2007; McDonald et al., 1995; Theodorakis et al., 2001). Table 1 shows the scales and dimensions developed to measure the service quality in the areas of spectator recreation and sport.

Table 1. The scales and dimensions developed to measure the service quality in the areas of spectator recreation and sport (Theodorakis and Alexandris, 2008; Ko et al., 2011; Yıldız, 2012; Çevik, 2013; Şimşek, 2014).

Researcher	Scale	Dimensions
McDonald, Sutton and Milne (1995)	TEAMQUAL	Reliability, Responsiveness, Assurance, Empathy, Physical characteristics
Wakefield, Blodgett and Sloan (1996)	SPORTSCAPE	Carpark, Aesthetics, Scoreboard, Comfort, Venue layout, Functionality, Signs, Desire to stay
Theodorakis, Kambitis, Laios and Koustelios (2001)	SPORTSERV	Accessibility, Reliability, Eagerness, Tangibles, Security
Kelley and Turley (2001)	—	Employees, Price, Facility access, Concessions, Fan comfort, Game experience, Show time, Convenience, Smoking
Westerbeek and Shilbury (2003)	—	Core sport product, Joint service production, SPORTSCAPE feature
Gencer (2005)	S_PSQPS	Quality of interaction, Quality of physical environment, Quality of core services
Kuenzel and Yassim (2007)	—	Social interaction, Game quality, Ambiance
Ko, Zhang, Cattani and Pastore (2011)	SEQSS	Game quality, Augment services, Quality of interaction, Quality of outcomes, Quality of physical environment

“The Scale of Event Quality for Spectator Sports” (SEQSS) developed by Ko et al. (2011) is one of the scales recently developed to evaluate the service quality of spectator recreational and sport services. Researchers state that SEQSS is valid and reliable for evaluating the quality of activity and the dimensions game, augment, services, interaction, outcomes and environment. It is also stated that the five dimensions will lead the way to identify the possible problems at the venue of activity and develop the services for future activities (Ko et al., 2011). It is important to tell about the abovementioned dimensions within this context.

Game: The game dimension means the perception of spectators about the performance of the contest which is the core product. The game quality is considered to be a dimension that is effective about satisfaction and watching the contest again in the future (Kunzel and Yassim, 2007). Kelley and Turley (2001) stated that sportive challenge, in other words, game performance is one of the basic factors that affect the quality in offering service. According to the researchers, it is difficult to control the game quality as other dimensions that affect the service quality for recreational and sport marketers. It is also difficult to assure that consumers will receive positive services when they go to watch a contest (Kelley and Turley, 2001).

Augment Services: The augment services dimension emphasizes the quality perception about the secondary products and services offered in relation with the activity. Augment services include entertainment services and concessions (food stands) representing the most important secondary products and services that contribute to spectators' experience about the service (Ko et al., 2011). In the study by Kelly and Turley (2001), the concessions stand out as the lowest scoring dimension which affects the service quality in terms of fans.

Quality of interaction: Quality of interaction means the nature of interaction between consumers and business employees (Kyle et al., (2010). The quality of interaction dimension focuses on how the service is offered. Interaction in offering service is possible in two ways: These are as follows:

-Interaction between Service Provider and Consumer: Interaction between service provider and consumer actually represents a subjective evaluation about how the service is offered by means of the interaction. More specifically, behaviors of service providers represent the personality characteristics at the points where the behaviors (such as good-humor, sincerity, courtesy, attitude, interest, frankness, and helpfulness) that will affect consumer's perception

about quality of interaction are expressed distinctly. Attitude, behavior, and employee's specialty in his field affect consumer's perception about service quality (Ko and Pastore, 2005).

-Interaction between Consumers: Interaction between consumers represents consumers' subjective perception about how other consumers' attitudes and behaviors are evaluated during the fulfillment of the service. Consumer's quality perception for the service is affected by other consumers' attitudes and behaviors. This social process is mentioned in the recreational and sport services in which consumers have high amount of interaction (Ko and Pastore, 2005).

Outcome: Quality of outcome represents what has been left to the consumer at the end of the service consumption or what the consumer has acquired (Grönroos, 1984; Ko et al., 2011). In other words, it is to focus on the outcome of the service action (Ko and Pastore, 2005). Spectators want to gain psycho-social benefits such as excitement, pleasure and social interaction when they participate in an activity (Ko et al., 2011). Quality of outcome is a dimension related to these abstract benefits which the individual acquires (Kyle et al., 2010).

Environment: Environment is the facility where the service experience occurs. It is stated that environment has an important effect on the general service quality perception (Brady and Cronin, 2001). Many studies conducted on the service quality in the recreational and sport industry mention that environment is the most important dimension in the evaluation of service quality (Chelladurai and Chang, 2000; Howat et al., 1996; Kim and Kim, 1995; Ko and Pastore, 2005; Ko and Pastore, 2007).

In previous research, environment has stood out as the most important factor among the factors affecting the spectator recreational sport services while augment services are the least important one (Chelladurai and Chang, 2000; Howat et al., 1996; Kelley and Turley, 2001; Kim and Kim, 1995; Ko and Pastore, 2005; Ko and Pastore, 2007). Another important point is that these studies mentioned about the difficulty to control the game dimension which affects the service quality of recreation and sport marketers. It can be given as the reason that the recreational and sport services have a changing nature. After all, spectator recreational and sport service may change depending on a series of factors such as the volatile performance of athletes or a team and specific conditions (weather conditions) during the presentation. That is to say, the services purchased by recreational and sport consumers may differ from week to week (Simit, 2008).

Since providing a high quality service is the goal that recreational and sport business want to achieve (Tsitskari et al., 2006), providing the consumers with a quality experience that meets the expectations contribute to future participations in recreational and sport activities and the consumption of these activities (Tsuji et al., 2007). As a result of this, it is important at this point that the dimensions which determine the quality of the provided service are known by recreational and sport marketers and service providers (Perez et al., 2010).

METHODS

Research Group

In the research, single screening model which is one of general screening models was used. The population of the research is composed of the participants who watched the contests and activities within the scope of 10th Kite Festival held at Anadolu University İki Eylül Campus Recreation field. The sample of the research consists of 325 individuals who were selected with the convenience sampling method.

Data Collection Instruments

The questionnaire method was utilized to collect data within the scope of the research. The process of data collection was performed by 8 interviewers towards the end of the kite festival program to be able to evaluate the data correctly. 350 questionnaire forms were distributed, and 332 of them (a respondency rate of 95%) were received back. 7 of them were not included in the evaluation for different reasons. In this research, the Scale of Event Quality for Spectator Sports (SEQSS) which was developed by Ko et al. (2011) to measure the service quality in the recreational and sport industry and of which reliability and validity studies for the Turkish language and culture were conducted by Simşek (2014) was used.

The SEQSS evaluates the service quality with 5 dimensions that also have the following 12 subdimensions: game (skill and performance, working hours, debriefing), augment services (sociability, concessions), interaction (employee interaction, fan interaction), outcome (socializing, valuableness), and environment (ambiance, design and scoreboard). Ko et al. (2011) reached the results $\chi2 = 985.13$; df = 705; $\chi2/df = 1.40$; RMSEA = 0.043; (90%CI) = 0.036-0.049; IFI = 0.939; CFI = 0.938; SRMR =0.072 for the model fit indexes (12). As a result of the confirmatory factor analysis, Simşek (2014) found the values $\chi2=451.86$, df=152,

p=.000<.001;χ2/df=2.97, RMSEA, 0.59 (acceptable); SRMR= 0.70 (acceptable); NFI=0.91 (acceptable); NNFI=0.96 (acceptable); CFI=0.96 (acceptable); GFI=0.97; (good fit) AGFI=0.88 (acceptable).

The original scale is composed of 39 items written in sentence form (Ko et al., 2011). As a result of the reliability and validity study performed by Simşek (2014), the item number of the scale was set to be 34.

Data Analysis

Frequency distributions, arithmetic means and standard deviations of the obtained data were presented as descriptive statistics. In addition, the sample group was compared in terms of gender, age, occupation, income and educational background to determine the service quality of the 10th Kite Festival. One Way Variance Analysis (ANOVA) and T-test analysis were used in the comparisons. The evaluation of variance homogeneity was conducted with the Levene's test for the differential means in ANOVA, and all data were found to be homogeneous. Measure values that provide variance homogeneity were evaluated with the LSD statistics to find from which groups the difference between gender, age, occupation, income and educational background originated ($p<0.05$).

RESULTS

Five demographic characteristics of the sample group were examined within the scope of the research. These are gender, age, occupation, income and educational background. Descriptive statistics of sample group's demographic characteristics were given in Table 2.

Table 2. Descriptive statistics of the sample group participated in research.

Descriptive Statistics	frequency n	Percent %
Gender		
Female	216	66,5
Male	109	33,5
Age		
14-19	73	22,5
20-25	123	37,8
26-31	26	8,0
32-37	72	22,2
37 and more	31	9,5

Occupation		
Housewife	24	7,4
Worker	22	6,8
Civil Servant	38	11,7
Student	176	54,2
Self Employment	65	20,0
Income		
Up to 1000 TL	125	38,5
1001-2000 TL	67	20,6
2001-3000 TL	54	16,6
3000 TL and more	79	24,3
Educational background		
Primary Education	33	10,2
High School	76	23,4
Associate degree and Undergraduate	187	57,5
Postgraduate	29	8,9

When Table 2 is examined, 66.5% of the sample group is female; 33.5% of it is male. The age range which ensured participation most (37.8%) is 20-25. The dominant educational backgrounds among the sample group are associate degree and undergraduate (57.0%). The widest participation in terms of occupation was by students (54.2%). Individuals with an income up to TRY 1000 (38.5%) ensured the widest participation in terms of income levels.

Table 3. Differentiation status of service quality factors according to gender of sample group.

Factors	Gender	N	Mean	Sd.	t	p
Game	Female	216	3,8771	,59128	,734	,618
	Male	109	3,8532	,60536		
Augment Services	Female	216	3,8256	,70780	,743	,297
	Male	109	3,7982	,72011		
Interaction	Female	216	3,8636	,81858	,422	,282
	Male	109	3,7863	,81858		
Outcome	Female	216	4,1844	,68658	,900	,707
	Male	109	4,1743	,68207		
Environment	Female	216	3,8913	,77341	,259	,560
	Male	109	3,7898	,74468		

** p<.01, * p<.05

The T-test was conducted to determine whether the factors that affect the service quality of the kite festival exhibit significant differences according to gender. As a result of the analysis, it was found that the factors were not significantly different according to gender statistically.

Table 4. Differentiation status of service quality factors according to age groups.

Factors	Age	n	Mean	Sd.	F	p
Game	14-19	73	3,9239	,64864	,568	,686
	20-25	123	3,8636	,57062		
	26-31	26	3,8034	,61689		
	32-37	72	3,8966	,57458		
	37 and more	31	3,7527	,60567		
Augment Services	14-19	73	4,0091	,73802	2,269	,062
	20-25	123	3,7561	,64419		
	26-31	26	3,6923	,98171		
	32-37	72	3,8426	,71091		
	37 and more	31	3,6452	,56066		
Interaction	14-19	73	3,9247	,78842	2,026	,091
	20-25	123	3,7713	,69214		
	26-31	26	3,6779	101,541		
	32-37	72	4,0122	,98947		
	37 and more	31	3,6250	,65440		
Outcome	14-19	73	4,1598	,75993	5,410	,000**
	20-25	123	4,0921	,62332		
	26-31	26	4,0128	,88935		
	32-37	72	4,4907	,56077		
	37 and more	31	4,0054	,60321		
Environment	14-19	73	3,9482	,81828	1,616	,170
	20-25	123	3,7907	,67575		
	26-31	26	3,8269	,95113		
	32-37	72	3,9826	,77692		
	37 and more	31	3,6416	,73267		

** p<.01, * p<.05

The One Way Anova test was conducted to determine whether the factors that affect the service quality of the kite festival exhibit significant differences according to age groups. Outcome factor has significant difference. Participants who were between 32 and 37 age presented were more positive opinions.

Table 5. Differentiation status of service quality factors according to occupations groups.

Factors	Occupation	n	Mean	Sd.	F	p
Game	Housewife	24	4,1343	,56178	2,765	,028*
	Worker	22	3,9949	,55975		
	Civil Servant	38	3,8977	,65627		
	Student	176	3,8718	,60631		
	Self Employment	65	3,7043	,51305		
Augment Services	Housewife	24	4,1343	,61577	2,435	,047*
	Worker	22	3,9949	,68147		
	Civil Servant	38	3,8977	,69954		
	Student	176	3,8718	,69186		
	Self Employment	65	3,7043	,77645		
Interaction	Housewife	24	4,1343	121,356	3,440	,009**
	Worker	22	3,9949	,78213		
	Civil Servant	38	3,8977	,75807		
	Student	176	3,8718	,72763		
	Self Employment	65	3,7043	,85806		
Outcome	Housewife	24	4,1343	,67372	1,595	,175
	Worker	22	3,9949	,71590		

	Civil Servant	38	3,8977	,60881		
	Student	176	3,8718	,66996		
	Self Employment	65	3,7043	,74131		
	Housewife	24	4,1343	,69495		
	Worker	22	3,9949	,68084		
Environment	Civil Servant	38	3,8977	,88505	1,265	,284
	Student	176	3,8718	,72333		
	Self Employment	65	3,7043	,83771		

** p<.01, * p<.05

When the service quality factors are examined to see whether they differ according to the occupations of the participants, the factors "game" (F= 2.765/ .028), "augment services" (F= 2.435/ .047) and "interaction" (F= 3.440/ .009) have the significant difference. LSD/Dunnett'C test was conducted to find between which groups the difference in the occupation groups is. It was found that opinions of those who were in the housewife occupation group for the game factor (X= 4.1343), the augment services factor (X=4.2104) and the interaction factor (X= 4.1343) respectively were more positive compared to other occupation groups.

Table 6. Differentiation status of service quality factors according to income groups.

Factors	Income	n	Mean	Sd.	F	p
Game	Up to 1000 TL	125	3,8987	,61298	3,082	,028*
	1001-2000 TL	67	3,8590	,60103		
	2001-3000 TL	54	4,0288	,54697		
	3000 TL and more	79	3,7215	,56931		
Augment Services	Up to 1000 TL	125	3,8600	,66747	5,596	,001**
	1001-2000 TL	67	3,9279	,72950		
	2001-3000 TL	54	3,9722	,72232		
	3000 TL and more	79	3,5464	,69437		
Interaction	Up to 1000 TL	125	3,8447	,74129	4,188	,006**
	1001-2000 TL	67	4,0205	102,011		
	2001-3000 TL	54	3,9645	,69874		
	3000 TL and more	79	3,5849	,76651		
Outcome	Up to 1000 TL	125	4,2000	,65171	,643	,588
	1001-2000 TL	67	4,2065	,70894		
	2001-3000 TL	54	4,2377	,65685		
	3000 TL and more	79	4,0907	,73370		
Environment	Up to 1000 TL	125	3,8978	,69555	4,479	,004**
	1001-2000 TL	67	3,9399	,83550		
	2001-3000 TL	54	4,0365	,71252		
	3000 TL and more	79	3,6006	,78993		

** p<.01, * p<.05

When the service quality factors are examined to see whether they differ according to the incomes of the sample group, it is seen that there is a significant difference between the factors "game" (F= 3.082/ .028), "augment services" (F= 5.596/ .001), "interaction"(F= 4.188/

.006) and "environment" (F= 4.479/ .004). LSD/Dunnett'C test was conducted to find between which groups the difference in the income levels is. Those who were with an income of TRY 2001-3000 TL (X= 4.0288) for the game dimension, of TRY 1001-2000 (X= 3.9279) for the augment services dimension, of TRY 2001-3000 (X= 3.9722) for the interaction dimension, and finally, of TRY 2001-3000 (X= 4.0365) for the environment dimension presented more positive opinions compared to other groups.

Table 7. Differentiation status of service quality factors according to educational backgrounds groups.

Factors	Educational Background	n	Mean	Sd.	F	p
Game	Primary Education	33	3,9663	,55866	1,871	,134
	High School	76	3,9825	,61985		
	Associate degree and Undergraduate	187	3,8194	,59978		
	Postgraduate	29	3,7816	,50350		
Augment Services	Primary Education	33	3,9495	,71137	6,562	,000**
	High School	76	4,0724	,71302		
	Associate degree and Undergraduate	187	3,7362	,66616		
	Postgraduate	29	3,5115	,78923		
Interaction	Primary Education	33	3,9154	,67984	4,875	,002**
	High School	76	4,1036	,98276		
	Associate degree and Undergraduate	187	3,7647	,72403		
	Postgraduate	29	3,5230	,89674		
Outcome	Primary Education	33	4,0758	,67455	2,060	,105
	High School	76	4,3202	,74025		
	Associate degree and Undergraduate	187	4,1720	,62836		
	Postgraduate	29	3,9943	,83747		
Environment	Primary Education	33	3,9394	,93197	2,801	,040*
	High School	76	4,0588	,74094		
	Associate degree and Undergraduate	187	3,7767	,73312		
	Postgraduate	29	3,7548	,74351		

** p<.01, * p<.05

When the service quality factors are examined to see whether they differ according to the educational backgrounds of the sample group, it is seen that there is a significant difference between the factors "augment services" (F= 6.562/ .000), "interaction" (F= 4.875/ .002), and "environment" (F= 2.801/ .040). LSD/Dunnett'C test was conducted to find between which groups the difference in the educational backgrounds is. For the augment services dimension,

high school graduates (X=4 .0724); for the interaction dimension, high school graduates (X= 4.1036), and for the environment dimension, high school graduates again (X= 4.0588) presented more positive opinions compared to other groups.

DISCUSSION

The aim of this research is to evaluate the service quality of Anadolu University kite festival that has traditionally been held for 10 years. According to the findings of the research, no significant difference was found in none of the dimensions game, augment services, interaction, outcome, and environment which affect the service quality of the kite festival according to the gender of the participants. Lin et al. (2001) stated that gender difference among consumers may affect the service quality perception. It is also said that gender of consumers is effective on the employee performance, that is, the service presentation. In previous research of the marketing literature, it has been commonly mentioned that female consumers tend to rate service quality at a poorer level when an intersexual comparison is made (Lee et al., 2011; Snipes and Thomson, 2006). In their study to examine the relationship between personality and service quality, Lin et al. (2001) concluded that gender is important in the relationship between personality and service quality. Spathis et al. (2004) mentioned that gender is an important factor for the service quality perception. They also stated that gender differences in the service quality perception may originate from distinctive behavior patterns and personality associated with gender. They added that there have been few studies that analyze this circumstance. Lee et al. (2011) conducted research to examine the effect of consumers' service quality perception on satisfaction, intention to revisit and role of gender at golf clubs. They concluded that female golfers attach more importance to physical presentation, cleanliness and outer appearance of the service provider. These results are not in harmony with those obtained from this study. Consequently, a relationship between gender and service quality perception is mentioned in the literature related to service quality. Dimensions that affect the service quality may differ depending on the type of industry (Lee et al., 2011). According to the results of this study, the reason why there is no difference in the demographic characteristic of gender may stem from the differentiation of the factors affecting the quality of spectator recreational and sport service in the sport and recreational industry.

It was found a significant difference in outcome factor when it was examined whether the quality of the kite festival differ according to participants' age groups. Participants who were

32 and 37 age had more positive perception about service quality. It is stated that the perception of service quality may be different among younger and older consumers. Younger consumers have less experience about service (Mankongvanichkul, 2010). Older consumers are more experienced about service and more informed of the services that purchase or consume (Dagger and Sweeney, 2007). According to the findings of the research, it can be thought that the service quality of kite festival especially in outcome factor is positive for elder participants.

When it is examined whether the service quality factors differ according to the occupations of the participants, the factors game, augment services and interaction have a significant difference. It was determined that individuals who are in the housewife occupation group have higher average in all three dimensions that affect the service quality of the kite festival. Averages of other occupation groups are lower than housewives'. It is said that occupation is an important indicator of the social class in industrialized societies since status levels differ among the individuals of the society and this is related to different occupations. High-status occupations have different characteristics, motivations and values than other less prestigious occupations (Williams, 2002). The characteristics of an occupation affect all aspects of individual's life including the purchasing behavior (Cheung, 2012). It can be concluded from the abovementioned findings that services offered within the scope of the kite festival were not compatible with the values of those who are from the other occupation group, they were not motivated by those services and encouraged to purchase the offered services.

When it is examined whether the service quality factors differ according to the monthly income of the participants, the factors game, augment services and interaction have a significant difference. No difference was found only in the outcome factor statistically. It draws attention that those with a monthly income of TRY 2001-3000 have a higher average than other income groups for the game, augment services and environment dimensions that affect the service quality of the kite festival. In addition, it is observed that those with a monthly income of TRY 1001-2000 have high averages for the augment services and interaction dimensions. Scott and Shieff (1993) stated that customers with different income levels also have different service quality perceptions. The findings obtained from the research verify this statement.

Educational backgrounds affect the way that consumer gets informed and decides. Educated consumers are more informed of difficulties and opportunities in the market (William, 2002).

When it is examined whether the service quality of the kite festival differs according to the educational background of the participants, it can be seen that the factors augment services, interaction and environment have a significant difference. It is pointed out that those who were graduated from high school have a higher average than others for the augment services, interaction and environment factors. It is considered to be a remarkable finding that for all factors in which there is a statistical difference, those who are postgraduates have the lowest average. It is said that educated individuals collect more information about the product or services they plan to purchase and think twice before purchasing those products or services. Additionally, individuals with higher educational levels have higher expectations about the service quality (Chow et al., 2007). It can be concluded within this context that the service quality perception for the kite festival is low from the aspect of individuals with higher educational levels.

CONCLUSIONS

Consequently, it was found that the service quality of the kite festival did not differ according to genders and age groups of the participants. It was observed that those from the housewife occupation group had a higher average for the game, augment services and interaction factors that affect the service quality of the kite festival. It was also noticed that individuals with different income levels had different perceptions for the factors affecting the service quality. It was concluded that the postgraduate participants had the lowest average for all of the dimensions that affected the service quality of the kite festival.

RECOMMENDATIONS

Based on the study in which they examined gender differences in the service quality, Huang, Ho and Bruce (2003) stated that effective service training programs should analyze the basic differences between genders. Within the scope of the study, few studies were found for the differentiation of service quality perception in the recreational and sport field according to gender (Lee et al., 2011). No study was found to be analyzing the reasons why the service quality is different depending on gender. It is thought that research on the reason why gender differences occur will significantly contribute to recreational and sport marketers and service providers. It is recommended in parallel with this information that it should be analyzed in future studies why gender differences occur or why this difference does not occur.

Services in the recreational and sport industry are classified under the topics of spectator and participating recreational and sport services. Studies on the evaluation of service quality and

scales developed to evaluate the service quality are conducted under these two topics. It was noticed during the research process that some services in the recreational industry cannot be classified like those in the sport industry can. For example, the kite festival has its spectator and participating aspects. Therefore, it is observed that some recreational services differ from sport services. While the service quality of the kite festival was examined within the scope of the study, the service quality was evaluated only from the aspect of spectator. No evaluation was performed for the participation aspect. Hence, both participation and spectator aspects should be addressed together to be able to literally evaluate the service quality of recreational activities like the kite festival. As a result, it is recommended to develop a new scale that focus on both participation and spectator so that services with participation and spectator dimensions in the recreational industry can be evaluated.

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