

Professional Athletes' Knowledge About and Awareness of Accessibility Signs/Symbols: A Descriptive Study

Profesyonel Sporcuların Erişilebilirlik İşaretleri/Sembolleri Hakkındaki Bilgi ve Farkındalıkları: Betimsel Bir Çalışma

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ABSTRACT Objective: In media and in many areas, the use of signs/symbols are promoted to indicate the accessibility of those facilities. It is important for the society, including athletes, to raise awareness about the meaning and significance of those signs/symbols. Therefore, this study seeks to understand professional athletes' knowledge about and awareness of the signs/symbols designed and used for accessibility. **Material and Methods:** A descriptive research model was used to gather data from 124 professional athletes. A survey questionnaire including demographic information as well as open-ended questions, such as 'whether the accessibility symbol was seen or not? if so, where? and what would be done to improve awareness about accessibility symbols?', was conducted. **Results:** Although 'yellow tactile pavement for the blind' was most seen (n=117), 'international symbol of accessibility' was the most known (n=101) and understandable (n=103) accessibility sign/symbol. On the other hand, 'active international symbol of accessibility' was reported as the least seen (n=11), known (n=12) and understandable (n=24) sign/symbol among all accessibility signs/symbols. Athletes emphasized the importance of raising awareness via internet, social media and tv. Only a few athletes mentioned that they have seen some accessibility signs/symbols in sport related areas. **Conclusion:** Result revealed that knowledge and awareness of athletes practicing sports in different branches about accessibility signs/symbols were not sufficient. More accessibility signs/symbols should be used in sports-related areas to emphasize that services in sports facilities are inclusive of all individuals, and that the media should promote awareness of these accessibility signs/symbols.

ÖZET Amaç: Medyada ve birçok alanda, bu tesislerin erişilebilirliğini göstermek için işaretlerin/sembollerin kullanımı teşvik edilmektedir. Sporcular da dahil olmak üzere toplumun bu işaretlerin/sembollerin anlamı ve önemi konusunda bilinçlendirilmesi önemlidir. Bu nedenle, bu çalışma profesyonel sporcuların erişilebilirlik için tasarlanan ve kullanılan işaretler/semboller hakkındaki bilgi ve farkındalıklarını anlamayı amaçlamaktadır. **Gereç ve Yöntemler:** Betimsel bir araştırma modeli kullanılarak 124 profesyonel sporcudan veri toplanmıştır. Veriler katılımcıların cinsiyet, eğitim düzeyi, özel gereksinimli olup olmadığı, yapmış olduğu spor branşı vb. bilgilerden oluşan demografik bilgilerin yanı sıra erişilebilirlik sembolünü daha önce görüp görmediği, gördüyse nerede gördüğü, erişilebilirliği artırmak adına neler yapılabileceği vb. açık uçlu sorulardan oluşan anket yöntemi ile toplanmıştır. **Bulgular:** 'Görme engelliler için hissedilebilir yürüme yüzeyi' en çok görülen (n=117) işaret olmasına rağmen, 'uluslararası erişilebilirlik sembolü' en çok bilinen (n=101) ve anlaşılabilir (n=103) erişilebilirlik işareti/sembolü olmuştur. Öte yandan, 'aktif uluslararası erişilebilirlik sembolü' tüm erişilebilirlik işaretleri/sembolleri arasında en az görülen (n=11), bilinen (n=12) ve anlaşılabilir (n=24) işaret/sembol olarak belirtilmiştir. Sporcular internet, sosyal medya ve televizyon aracılığıyla farkındalık yaratmanın önemini vurgulamıştır. Sadece birkaç sporcu sporla ilgili alanlarda bazı erişilebilirlik işaretlerini/sembollerini gördüklerini belirtmiştir. **Sonuç:** Sonuçlar, farklı branşlarda spor yapan sporcuların erişilebilirlik işaretleri/sembolleri hakkındaki bilgi ve farkındalıklarının yeterli olmadığını ortaya koymuştur. Spor tesislerindeki hizmetlerin tüm bireyleri kapsayıcı olduğunu vurgulamak için sporla ilgili alanlarda daha fazla erişilebilirlik işareti/sembolü kullanılmalı ve medya bu erişilebilirlik işaretleri/sembolleri konusunda farkındalığı teşvik etmelidir.

Keywords: Accessibility; signs and symbols; athletes; sports facilities; universal

Anahtar Kelimeler: Erişilebilirlik; işaret ve semboller; sporcular; spor tesisleri; evrensel

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“We need to make every single thing accessible to every single person with a disability.”

Stevie Wonder

Although health benefits of participating in physical activities were stated in many studies, including benefits for individuals with disabilities, studies to date have also reported a number of barriers to participate in physical activities especially for this particular population.¹⁻³ Among the barriers stated in many studies, barriers to access to sport environment and accessible programs were also reported.^{4,5} Studies revealed that sport facilities including fitness centers, stadiums, community parks etc. used for sports or physical activities are not often accessible for individuals for all kinds of disabilities. Rimmer et al. for example, examined the accessibility of 227 fitness facilities in 10 states in the United States, using the Accessibility Instrument Measuring Fitness and Recreation Environments (AIMFREE) tool and reported low accessibility in the majority of the facilities examined.⁶ Arbour-Nicitopoulos and Martin-Ginis also used a modified version of AIMFREE to assess the accessibility of fitness and recreational facilities in Canada.⁷ The results of the study showed that none of the 44 facilities were completely accessible. Fitri et al. also reported similar findings regarding accessibility of sport facilities for individuals with disabilities in Indonesia and Malaysia.⁸ Authors used a qualitative approach to collect data from ninety Paralympic athletes and reported the barriers under five themes that athletes were facing; lack of accessibility to training facilities, lack of accessibility inside the facilities, lack of accessibility of training equipment for athletes with disabilities, access during competition and athletes' expectations for both countries.⁸ In Türkiye, studies also showed that among other barriers, environmental barriers including accessibility issues also prevent individuals with disabilities to participate in physical activity and/or sports.⁹⁻¹¹ Esatbeyoğlu and Güven-Karahan for example reported in their study that along with personal barriers individuals with disabilities cannot participate to sports because of accessibility issues regarding sports facilities.⁹ Moreover, Argan et al. reported that the presence of environmental barriers directly affect participation in sports especially for individu-

als with physical disabilities.¹⁰ Paralympic athletes also reported environmental barriers including lack of accessible sports facilities and sports equipment to participate in sports and continue their training before big events such as Paralympics.¹¹

In order to overcome those barriers and welcome all participants to sport events and facilities, countries started to invest in initiatives designed to promote active lifestyle for all its citizens including individuals with disabilities. Especially, today, many organizations use universally designed accessibility signs/symbols to emphasize that the products they produce are accessible or that the service or environment provided is inclusive of all individuals.¹²⁻¹⁴ Among the signs/symbols, the most widely used sign that represents “access” today is the “wheelchair” sign which is the “international symbol of accessibility”.^{15,16} This sign, which is frequently seen in many areas such as parking lots, toilets, ramps, etc. of sports complexes, tries to emphasize that individuals with all kinds of special needs can also benefit from the services provided comfortably, and actively engage in sports. In addition to the wheelchair sign, other universal signs/symbols such as sign language interpretation, accessible elevator etc. are also being used today in many areas including sport facilities. In Türkiye, the Ministry of Family and Social Services (MoFSS), which was The Ministry, Labour and Family and Social Services by then, provided accessibility guidelines for buildings such as hospitals, government buildings as municipalities, university buildings and all kinds of sports facilities.¹² The MoFSS defined “accessibility” as “the use of buildings, open spaces, transportation and information services, and information and communication technology, safely and independently by individuals with disabilities” where buildings include official buildings, as well as sports facilities, swimming pools, general parking lots and similar public buildings.¹⁷ The MoFSS also give accessibility awards to facilities as an incentive to promote accessibility in all areas and include all members of the community.¹² The guideline also emphasizes the use of sign/symbols in buildings where needed to promote accessibility for individuals with disabilities.¹² Along with MoFSS accessibility guidelines, the Building In-

spection Implementation Regulation requires buildings to be “accessible” in compliance with accessibility standards including the use of necessary signage.¹⁸ Moreover, decades ago, General Directorate of Sports made compulsory for physical education and sports facilities to take necessary measures for the safety of individuals and athletes with disabilities to participate independently in activities and use facilities fully.¹⁹

Although the use of signs/symbols of accessibility is broadening to welcome all individuals to fully participate in the community, studies still report the lack of usage of those signs/symbols in sport facilities.^{6,8} Rimmer et al. reported that usage of accessibility signs in hospitals/rehabilitation facilities were significantly higher than the usage of those signs in fitness centers and health clubs.⁶ Similar to Rimmer et al., Fitri et al. also reported lack of information signs and lack of braille signs inside sport facilities.^{6,8} Mes-tayer et al. also examined the accessibility of one university’s sport facilities including one football stadium and one basketball arena according to the American with Disabilities Act laws and regulations and concluded that although every ramp and bathroom is marked with the symbol, which includes Braille for individuals with visual impairments in the newer portion of football stadium, basketball arena lacked Braille from all signage within the facility.²⁰ In another study from Europe, Sá et al. reported that of the eleven sport complexes/facilities, only 25% used signs/symbols for individuals with disabilities in their entrances/exits, routes, parking places and of those signs/symbols, only 12.5% of them were positioned in a way that could be easily seen and had characters and symbols with contrasting colors.²¹ Moreover, Barstow et al. tried to identify a symbol representing universal access to fitness equipment in their study.²² The authors asked participants to rank order nine symbols from one to nine, one denoting most effective symbol and nine denoting least effective symbol to represent accessible equipment. Among nine symbols, a Venn diagram of universal design of accessibility symbol with a dumbbell in the hand and a standing person with two dumbbells was ranked the most effective symbol to represent accessible equipment for both people with and without disabilities.²²

A modified version of international symbol of accessibility (active international symbol of accessibility), to denote universal accessibility of space and fitness equipment, with the original International Symbol of Accessibility, were ranked the lowest in representing inclusiveness of all disabilities in the same study, however.²²

The power of sports to bring vast numbers of people together is well known, therefore, the contribution of professional athletes in raising awareness about signs/symbols designed for accessibility cannot be ignored. Considering that athletes are the most frequent users of those facilities, it would be expected that they would be the ones who are more familiar with accessibility signs/and symbols in sport facilities. For this reason, it is important that athletes recognize these signs/symbols related to accessibility and know what the sign/symbol signifies. Although there are studies on the usage of the signs/and symbols of accessibility in sport facilities, unfortunately, there are no known studies on the athletes’ awareness of and knowledge about the signs/symbols designed for accessibility.^{6,8,21} For this reason, this study is a preliminary study to investigate the awareness of athletes about the usage of accessibility signs/symbols in facilities especially in sport facilities. In order to investigate the awareness of athletes this study addresses the following research questions;

1. To what extent accessibility signs/symbols and tools used are known and recognized by professional athletes who are the envoys of the society?
2. What would be done to increase the awareness and knowledge about the accessibility signs and symbols?

MATERIAL AND METHODS

PARTICIPANTS

A purposive sampling method was used to gather data about the awareness and knowledge of athletes. In order to be a participant for this study, participants needed to be a licensed athlete of Spor Toto Sports Club. Out of one hundred ninety-five licensed athletes, one hundred twenty-four professional athletes (64%) from different sports branches participated in

this study voluntarily. In descriptive studies a sample of 10% of the population is considered the minimum proportion.²³ In depth information about those athletes were gathered using a demographic information form. Of those athletes, one hundred and fourteen athletes were male (91.9%) and ten of them were female (8.1%). In addition, seventy-one athletes were high school graduates (57.3%). Sixty-nine athletes played volleyball and forty-one of them played handball professionally. Fourteen athletes played other types of sports. In order to reveal the general knowledge and awareness about disability, detailed information was obtained about whether they had special needs, whether they knew someone with special needs before, whether they were affiliated with an association or club for individuals with disabilities, and whether they had participated in any activity for aforementioned population before. Only one athlete (0.8%) had a disability him/herself and of one hundred twenty-four athletes only twenty-eight (22.6%) stated that they knew someone with a disability. One hundred and five athletes were not a member of a disability club/community (84.7%) and ninety-five of them did not participate to a disability related event (76.6%). Demographic information of athletes is summarized in [Table 1](#).

DATA COLLECTION

A descriptive research model was used to gather data from professional athletes. A questionnaire developed by the researcher and colleagues for another study regarding accessibility signs/symbols was adapted in this study. Survey questionnaire was sent to two experts from special education departments of two different universities to make sure the questions were understandable and served the purpose of the research. After the addition of “active international symbol of accessibility” symbol to the survey questionnaire, the questionnaire was sent one more time to an expert in sports management from Ministry of Youth and Sport. The questionnaire included open and closed-ended questions related to signs/symbols of accessibility which was developed from the accessibility guide of the MoFSS.¹² Only signs/symbols for accessibility that are likely to be seen in a sport related area or facility were included

TABLE 1: Demographic information of athletes.

	n	%
Gender		
Female	10	8.1
Male	114	91.9
Education		
Middle school	7	5.7
High school	71	57.3
College	5	4.0
University	36	29.0
Post graduate	5	4.0
Sports		
Track and field	1	0.8
Cycling	9	7.3
Soccer	2	1.6
Handball	41	33.1
Orienteering	1	0.8
Free diving	1	0.8
Volleyball	69	55.6
Disability		
Has a disability	1	0.8
Don't have a disability	123	99.2
Knows someone with a disability		
Yes	28	22.6
No	95	76.6
No response	1	0.8
Member of a disability club/Community		
Yes	19	15.3
No	105	84.7
Participated to an event for individuals with disabilities		
Yes	27	21.8
No	95	76.6
No response	2	1.6
Total	124	100

in this study. Moreover, “active international symbol of accessibility” symbol was also included, with the permission from the first author, since it is most likely to be seen or used symbol in a sport facility and similar to the original “international symbol of accessibility” which is used as a global representation of accessibility.²² A total of 10 signs/symbols were included in the survey ([Figure 1](#)). Questions regarding the demographic information of the athletes were also developed.

Prior to data collection, ethical approval was obtained from the Social Sciences and Humanities Sci-

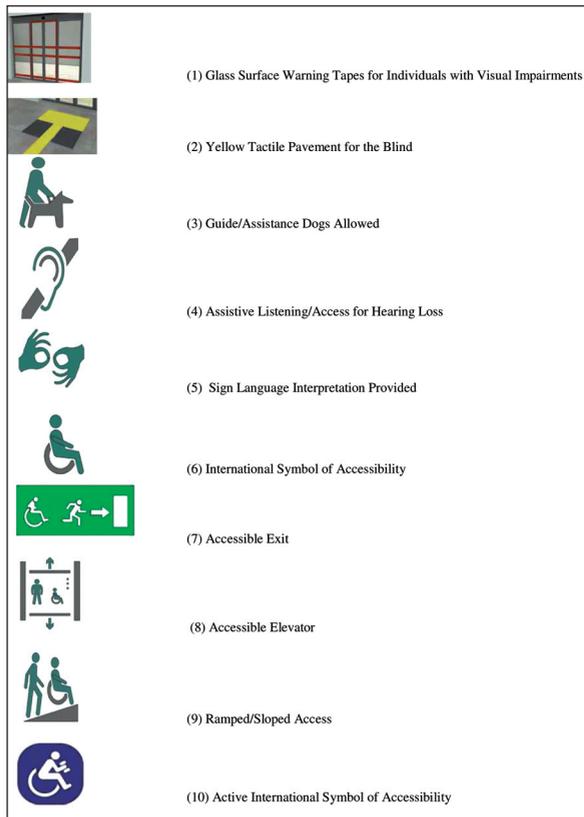


FIGURE 1: Signs and symbols of accessibility used in the study.

Accessibility signs/ symbols from 1-9 are adapted from Turkish Ministry of Family and Social Services Accessibility Guidelines (MoFSS, 2020), (10) Active International Symbol of Accessibility was adapted from Barstow et al., (2019).

entific Research and Publication Ethics Committee of the Uşak University (date: July 08, 2021, no: 2021-136). Additionally, the present study was prepared in accordance with the Declaration of Helsinki protocol of principles. Data were gathered by sending the link of the survey questionnaire to the professional athletes. Before answering the survey questionnaire, informed consent statement was included for the athletes to approve whether they participate voluntarily. Only athletes who were willing to participate voluntarily to the study were asked to continue to the questionnaire. Athletes were then asked to answer the following questions for each sign/symbol of accessibility; Did you see this sign/symbol? If so, where did you see it? Do you know this sign/symbol? Is the sign/symbol easy to understand? What could be the meaning of this sign/symbol? What would you recommend to increase the awareness of the accessibility signs/symbols?

Data were later analyzed by using descriptive statistics; frequencies and percentages were provided for each sign/symbol. Conceptual content analysis was also used to analyze open-ended questions; Where did you see it?; What would you recommend to increase the awareness of the accessibility signs/symbols?²⁴ In conceptual content analysis inductive coding approach was used where the codes were developed based on what was found within the data.²⁵ During this process the researcher read, organized, and formed categories, concepts and the expert in sport management themes by carefully comparing the similarities and differences between the answers to the abovementioned questions.

RESULTS

Results of the study revealed that the most seen accessibility sign/symbol was the “yellow tactile pavement for the blind” (94.4%) followed by “international symbol of accessibility” (84.7%). However only one volleyball player reported seeing “yellow tactile pavement for the blind” in a sports facility. The least seen accessibility sign/symbol, on the other hand, was “active international symbol of accessibility” (8.9%) followed by the symbol of “accessible elevator” (9.7%). However, the most known symbol was the “international symbol of accessibility” (81.5%) among all signs/symbols. Athletes also reported that “international symbol of accessibility” (83.1%) was the most understandable symbol whereas “active international symbol of accessibility” (19.4%) was the least understandable symbol among all ten signs/symbols (Table 2).

When asked about where the sign/symbol was seen, athletes reported that they have seen “yellow tactile pavement for the blind” mostly on common areas as roads, streets or entrances of buildings (n=112), however, only one athlete mentioned seeing it in a sport related facility. “Glass surface warning tapes” as well as the “international symbol of accessibility” (n=33) and “accessible exit” (n=24) were mostly seen in buildings as shopping malls, hospitals etc. “International symbol of accessibility” (n=22) on the other hand, was seen in public transportations such as buses, trains and metros. Athletes reported only seeing five of the ten signs either in a

TABLE 2: Have you seen/do you know the accessibility sign/symbol? Is it easy to understand? (First 5 signs/symbols).

Accessibility sign	(1) n (%)	(2)* n (%)	(3) n (%)	(4) n (%)	(5) n (%)	(6)** n (%)	(7) n (%)	(8) n (%)	(9) n (%)	(10) n (%)
I've seen										
Yes	41 (33.1)	117 (94.4)	44 (35.5)	22 (17.7)	19 (15.3)	105 (84.7)	31 (0.3)	12 (9.7)	31 (0.3)	11 (8.9)
No	83 (66.9)	7 (5.6)	80 (64.5)	102 (82.3)	105 (84.7)	19 (15.3)	93 (0.7)	112 (90.3)	93 (0.7)	113 (91.1)
I know										
Yes	11 (8.9)	100 (80.7)	47 (37.9)	24 (19.4)	23 (18.5)	101 (81.5)	28 (22.6)	12 (9.7)	31 (0.3)	12 (9.7)U
No	113 (91.1)	24 (19.3)	77 (62.1)	100 (80.6)	101 (81.5)	23 (18.5)	96 (77.4)	112 (90.3)	93 (0.7)	112 (90.3)
It's easy to understand										
Ye	32 (25.8)	100 (80.7)	52 (41.9)	38 (30.7)	42 (33.9)	103 (83.1)	48 (38.7)	27 (21.8)	49 (39.5)	24 (19.4)
No	91 (73.4)	20 (16.1)	71 (57.3)	83 (66.9)	81 (65.3)	18 (14.5)	76 (61.3)	97 (78.2)	74 (59.7)	94 (75.8)
Not sure	1 (0.8)	4 (3.2)	1 (0.8)	3 (2.4)	1 (0.8)	3 (2.4)	0 (0.00)	0 (0.00)	1 (0.8)	6 (4.8)
Total	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)	124 (100)

(1) Glass Surface Warning Tapes for Individuals with Visual Impairments; (2) Yellow Tactile Pavement for the Blind; (3) Guide/Assistance Dogs Allowed; (4) Assistive Listening/Access for Hearing Loss; (5) Sign Language Interpretation Provided; (6) International Symbol of Accessibility; (7) Accessible Exit; (8) Accessible Elevator; (9) Ramped/Sloped Access; (10) Active International Symbol of Accessibility; *Most seen; **Most Known; Most Understandable.

sport facility or a sport event. Moreover, only two athletes mentioned seeing “international symbol of accessibility” and “ramped/sloped access” in a sport facility followed by “access for hearing loss” (n=1). The most seen sign/symbol was the “active international symbol of accessibility” (n=9) in a sport related place (Table 3).

Most athletes knew the meaning of the “yellow tactile pavement for the blind” correctly (71.8%) followed by “access for hearing loss” (48.4%) and “guide/assistive dogs allowed” (46.0%). On the other hand, athletes did not know the meaning of “accessible elevator” (65.3%) and “active international symbol of accessibility” (64.5%) correctly. Interestingly, although “international symbol of accessibility” was reported as the most known (81.5%) and understandable symbol (83.1%), only 39 athletes knew true meaning of this symbol (31.5%) (Table 4).

Besides, content analysis revealed that athletes recommended using print or visual media such as internet, TV or social media (n=40) to raise awareness about accessibility signs and symbols. Athletes also suggested that raising awareness in the educational settings (n=30) would also increase knowledge about them. Besides, increasing visibility (n=24) by using the sign/symbols in common areas as shopping malls, hospitals as well as in sport facilities and organizing informative materials/events (n=18) would also increase the awareness of those signs/symbols. Athletes also suggested using more understandable illustrations, bigger or simpler visuals, and more colorful, eye-catching gifs would also increase the awareness. Writing the meanings of the signs/symbols (n=9) were another suggestion to increase awareness about the accessibility signs/symbols (Table 5).

DISCUSSION

This study aimed to understand professional athletes’ knowledge about and awareness of the signs/symbols designed and used for accessibility. Usage of proper accessibility signs/symbols in sport facilities may increase the number of users with disabilities participating in physical activities

TABLE 3: The frequencies of the answer to the question; where have you seen this sign/symbol?

	GSWT (1) n	YTP (2) n	GDA (3) n	AHL (4) n	SLIP (5) n	ISA (6) n	AEx (7) n	AE (8) n	R (9) n	AISA (10) n
Buildings (shopping malls, hospitals, etc.)	30	3	0	3	2	33	24	8	10	0
Common areas (street, avenue, parks etc.)	1	112	22	N/A	N/A	44	N/A	N/A	7	N/A
Public transportation (buses, trains, metro etc.)	1	0	1	4	0	22	1	N/A	2	N/A
Media (internet, TV, social media etc.)	0	0	5	3	4	1	0	0	2	2
Educational fields (seminars, courses, books etc.)	3	0	3	2	4	3	1	0	3	1
Sport facilities/events (stadiums, fitness centers etc.)	0	1	0	1	0	2	0	0	2	9
No response	1	3	7	7	5	6	6	6	9	4

GSWT: Glass Surface Warning Tapes; YTP: Yellow Tactile Pavement for the Blind; GDA: Guide Dogs Allowed; AHL: Access for Hearing Loss; SLIP: Sign Language Interpretation Provided; ISA: International Symbol of Accessibility; AEx: Accessible Exit; AE: Accessible elevator; R: Ramped/Sloped Access; AISA: Active International Symbol of Accessibility; N/A: Not applicable; Only the number of answers that was stated "Yes" to the question of "Have you seen this sign/symbol" were included in the analysis and some signs/symbols were reported to be seen in more than one place.

TABLE 4: The frequencies and the percentages of the answers to the questions; what could be the meaning of this sign/symbol?

Sign/Symbol	What could be the meaning of this sign/symbol?		
	Correct response	Incorrect response	No response
	n (%)	n (%)	n (%)
Yellow tactile pavement for the blind	89 (71.8)	19 (15.3)	16 (12.9)
Access for hearing loss	60 (48.4)	8 (6.5)	56 (45.2)
Guide/Assistive dog	57 (46.0)	34 (27.4)	33 (26.6)
Ramped/Sloped access	49 (39.6)	16 (12.9)	59 (47.6)
Sign language interpretation	39 (31.5)	16 (12.9)	69 (55.6)
International symbol of accessibility	39 (31.5)	67 (54.0)	18 (14.5)
Glass surface warning tapes	29 (23.4)	25 (20.2)	70 (56.5)
Active international symbol of accessibility	26 (21.0)	18 (14.5)	80 (64.5)
Accessible elevator	21 (16.9)	22 (17.7)	81 (65.3)
Accessible exit	20 (16.1)	41 (33.1)	63 (50.8)

The table is ranked from the most correct response to the least correct response.

TABLE 5: Themes and keywords emerged from the participant statements.

Themes	Keywords	Frequencies (n)*
Using print and visual media	Internet, TV, social media etc.	40
Raising awareness through education	Schools, books, seminars etc.	30
Increasing visibility by expanding areas of use of accessibility signs/symbols	Shopping malls, hospitals, sport facilities etc.	24
Organizing informative materials/events	Brochures, stands etc.	18
Understandable redesign of accessibility signs/symbols	More understandable illustrations, bigger and simpler visuals, more colorful, eye-catching animated gifs etc.	12
Writing the meanings of the signs/symbols	Writing under/behind the sign/symbols etc.	9

*Participants' answers were categorized in more than one theme therefore the total frequency is more than 124.

and sport and later contribute health and well-being of those individuals. However, in order for that to happen all sport facilities including fitness centers, courts, swimming pools, stadiums etc. need to meet

the accessibility compliances of the laws and regulations of MoFSS including the proper usage of signs and symbols in those areas.¹² In MoFSS Accessibility Guidelines, it is compulsory to build "yellow tac-

tile pavement for the blind” in places for public use.¹² As a result, it is more likely to be used both in many external areas such as streets, parks, avenues as well as internal areas such as government buildings, hospitals, shopping malls, sport facilities. However, although “yellow tactile pavement for the blind” was reported as the most seen accessibility sign/symbol in public areas, it was not reported as such in sports facilities by the participants of this study.

Although, “active international symbol of accessibility” was reported as the least seen and least understandable accessibility sign/symbol in general, it was also reported as the most seen sign/symbol in sports facilities such as fitness centers and gyms in this study. This is an interesting finding since this specific sign/symbol is included neither in the MoFSS Accessibility Guidelines nor in any other laws and regulations used in accessibility guidelines used in architectural designs in Türkiye which needs further investigation.

Athletes also reported “international symbol of accessibility” as the most known and understandable symbol, however, most athletes did not know the true meaning of the symbol. Instead of relating the symbol with all disabilities, athletes mostly related this symbol with only wheelchair users and responded accordingly.^{15,16,26} Literature also has debates on whether the “international symbol of accessibility” represents all individuals with disabilities.^{15,16,26} Vice et al. for example investigated the effectiveness of the “international symbol of accessibility” in representing individuals of all disabilities and concluded that this symbol was not effective in representing individuals with non-mobility impairments.¹⁶ The authors also stated that the symbol also caused confusion for both individuals with and without disabilities.¹⁶ Therefore, the results of this study also support the consideration of re-designing “international symbol of accessibility” to represent all types of disabilities.

Since the possibility to see glass surfaces, such as glass doors, display windows, is more in places such as shopping malls, hospitals etc. the sign/symbol of “glass surface warning tapes” can be expected to be seen in such buildings which was also reported by the athletes in this study. Even though glass surfaces

are not preferred inside sport facilities such as gyms, some sport facilities have entrance doors made out of glass. Therefore, the use of glass surface warning tapes will make it easy to recognize the glass especially for individuals with visual impairments in such places. Because of the MoFSS accessibility requirements in buildings, organizations and institutions follow the rules and regulations and the use of such signs are becoming more and more visible nowadays.¹²

In general, of all ten signs/symbols, athletes reported seeing only five of the signs/symbols in sports facilities; active international symbol of accessibility, international symbol of accessibility, ramped/sloped access, yellow tactile pavement for the blind and access for hearing loss, which bring to mind other questions that needs further investigation; Is it because of the issue of sports facilities being not accessible, therefore the signs/symbols were not seen in those facilities, or is it solely because of the lack of the usage of signs/symbols within the sport facilities?^{4-8,20,21}

Athletes recommended using print or visual media to raise awareness about accessibility signs/symbols. Considering the media’s effect on advertising and telecasting of sports events and the use of social media by a wide range of people, it is appropriate using these means to raise awareness in recognition of the signs/and symbols of accessibility especially in sports community. Results also revealed that teaching accessibility sign and symbols in courses especially starting from primary school, including those signs/symbols in textbooks and giving seminars about those, would increase the awareness and knowledge of not just the athletes but also the whole community. Besides, athletes also recommended increasing visibility by expanding areas of use of accessibility signs/symbols especially within sport facilities which was also supported by the literature.²¹ Furthermore, as in Sá et al.’s study, athletes in this study also recommended using more understandable illustrations, bigger and simpler visuals and more colorful and eye-catching animated gifs and also writing the meanings of the signs and symbols to enable a clear understanding of the message of accessibility signs/symbols by not only athletes but also

by all individuals who participate in sport activities as recommended in previous research.²¹

CONCLUSION

It can be concluded that not all accessibility signs and symbols are known, seen or understood by athletes practicing sports in different branches in this study. Only, “yellow tactile pavement for the blind” was the most seen and “international symbol of accessibility” was the most known and understood accessibility sign/symbol among all signs/symbols. Moreover, of all ten signs/symbols, only five of the signs/symbols were seen in sports facilities. The results of the study should be interpreted with caution however, since this study only included 124 professional athletes, only one with a disability, and did not investigate the accessibility of sport facilities precisely.

RECOMMENDATIONS

As the athletes who participated in the study recommended, increasing the visibility of accessibility signs and symbols both in the media and in public places such as buildings, open spaces, transportation, parking lots as well as sports facilities, swimming pools, etc. will increase the level of awareness and knowledge about these signs. To welcome all participants to sport events and facilities and to emphasize that the services or environment provided is inclusive of all individuals, initiatives such as use of accessibility signs and symbols designed to promote active lifestyle for all individuals including individuals with

disabilities should be implemented. Together, these recommendations may help enhance the recognition of universal accessibility signs/symbols, and promote the usage of those signs/symbols where necessary and ultimately increase the use of sport facilities by individuals with disabilities. Athletes are the voluntary envoys of the society; therefore, they are the ones that can serve the mission of raising awareness regarding accessibility in sport facilities, including the usage of signs/symbols. Further research with more participants including athletes with all kinds of disabilities might give more insight about the awareness of and knowledge about accessibility signs and symbols and the use of aforementioned signs and symbols in sport facilities.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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