TOJRAS The Online Journal of Recreation and Sports 14(1), 2025
ISSN: 2146-9598 Research Article

# Hearing Impaired and Non-Hearing Impaired Investigation of Some Physiological and Motoric Characteristics of Football Players

*İşitme Engeli Olan ve İşitme Engeli Olmayan Futbolcuların Bazı Fizyolojik ve Motorik Özelliklerinin İncelenmesi*

Hüseyin GÖRÜCÜ[1], Emre BAĞCI[2], * Müslim Ertuğrul KAYIŞOĞLU[3]

[1] *Gazi Üniversitesi, Spor Bilimleri Fakültesi, Ankara, TÜRKIYE / huseyin.grc@gmail.com /0009-0002-4516-4642*
[2] *Gazi Üniversitesi, Spor Bilimleri Fakültesi, Ankara, TÜRKIYE / ebagci@gazi.edu.tr / 0000-0002-0989-0412*
[3] *Milli Savunma Üniversitesi, Beden Eğitimi ve Spor Bölümü, Ankara, TÜRKIYE / mekayisoglu@kho.msu.edu.tr / 0000-0003-1450-1685*
* *Corresponding author*

**Abstract:** This study aimed to explore the potential impact of hearing impairment on specific athletic performance traits in football players. Fifteen male hearing-impaired amateur football players and ten male non-hearing-impaired amateur football players voluntarily participated in this study. The mean age of the participants was 23.00±6.94 years, with a mean height of 177.64±5.23 cm and a mean body weight of 73.42±12.47 kilograms. Since the data distribution did not meet the normality assumption, the Mann-Whitney U test was employed for statistical analysis. The results revealed a statistically significant difference in reaction time, with football players without hearing impairment demonstrating superior performance compared to their hearing-impaired counterparts. However, no significant differences were found between the two groups regarding balance, coordination, and speed.

**Keywords:** Hearing impaired, football, physical performance, motoric characteristics.

***Özet:*** *Bu çalışmada işitme engelli olma durumunun, futbolcuların seçilmiş atletik performans özellikleri üzerinde etkisi olup olmadığının araştırılması amaçlanmıştır. 15 erkek işitme engelli amatör futbolcu ile 10 erkek işitme engelli olmayan amatör futbolcu bu araştırmaya gönüllü olarak katılmışlardır. Katılımcıların yaş ortalamaları 23,00±6,94 yıl, boy ortalamaları 177,64±5,23 cm ve vücut ağırlığı ortalamaları 73,42±12,47 kilogramdır. Verilerin dağılımları normallik göstermediğinden Mann-Whitney U testi kullanılmıştır. Veriler incelendiğinde reaksiyon zamanı açısından işitme engeli bulunmayan futbolcular ile işitme engelli futbolcular arasında istatistiksel açıdan anlamlı bir farklılık bulunmuş ve işitme engeli olmayan futbolcuların işitme engeli bulunan futbolculara göre daha iyi değerlere sahip olduğu tespit edilmiştir. Buna karşın seçili motorik özelliklerden denge, koordinasyon ve sürat açısından anlamlı farklılıklar tespit edilmemiştir.*

***Anahtar Kelimeler:*** *İşitme engelli, futbol, fiziksel performans, motorik özellikler.*

Received: 11.06.2024 / Accepted: 19.01.2025 / Published: 30.01.2025

https://doi.org/10.22282/tojras.1497862

***Citation:*** *Görücü, H., Bağcı, E., & Kayışoğlu, M.E. (2025). Hearing impaired and non-hearing impaired investigation of some physiological and motoric characteristics of football players, The Online Journal of Recreation and Sports (TOJRAS), 14(1), 25-31.*

## INTRODUCTION

Described as "the largest minority in the world", people with disabilities constitute approximately 15 per cent of the world's population with their number reaching almost one billion. According to the United Nations Development Programme, 80 percent of this population lives in developing countries (Tamer, 2000).

Different studies see disability as an important limitation in the physical and psychosocial interactions of the individual with his/her environment. The situations that cause this restriction are stated as the individual's having a distorted body experience and the reflection of the stigmatising attitudes of the society (Gür, 2001; Hutzter & Bar-Eli, 1993). For this reason, it is thought that physical and physiological pauses may occur in individuals with physical disabilities due to the interaction between physical, environmental and social problems (Semenick, 1990). When the literature on the rehabilitation of physically disabled individuals is analysed, it is understood that sport is beneficial both physically and psychologically. In short, one of the effective methods used to integrate disabled people into the society and rehabilitate them is sports (Kosel, 1981). According to Karakoç et al. (2012), disabled individuals who do sports improve their mental and psychomotor (balance, strength, speed, flexibility, physical fitness) skills compared to disabled individuals who do not do sports and thus make them more productive. In this context, disabled individuals learn the phenomenon of winning and losing in sportive activities and prepare themselves for this (Karakoç et al., 2012).

It has been reported that physical deficiencies, which are influenced by the individual genotype of each disabled athlete, significantly affect physical fitness parameters (Jaarsma et al., 2014). Supporting this information, in another study by Franciosi et al. (2010), it was reported that disabled individuals tended to achieve worse results than their non-disabled peers in different studies addressing body composition, cardiorespiratory endurance, muscle strength and agility (Franciosi et al., 2010). Therefore, it is stated that measuring the relationship between athletic performance parameters in disabled individuals and variables in different forms can help sedentary disabled individuals to be physically and mentally integrated into the society, while it can serve as a key element in bringing the branch-specific techniques of disabled individuals who are athletes to the optimal level (Frontera, 2006).

When considered only in the context of the hearing impaired, it has been determined that activities requiring athletic performance have a positive effect on the mental capacities, physical and spiritual development of the hearing impaired and provide progress in various aspects such as motoric skills, balance, hand-eye coordination, language development, development of problem solving ability (Gür, 2001). The most important feature of participating in the sports environment for the hearing impaired is that it facilitates the formation of social identity by facilitating interaction and communication within and between groups through participation in a group regardless of age, gender, education and degree of interest in sports and recent studies have highlighted that adapted physical education can motivate and stimulate deaf students to engage in social interactions, thereby enhancing their social identity and inclusion (Barboza et al.,2019)." It has been stated that physical education, games and sports programmes can improve motor skills in hearing impaired children and this can contribute positively in terms of increasing self-confidence and socialisation in children. In this respect, the importance of sports on disabled individuals increases even more. Engaging in sports not only enhances physical abilities but also plays a crucial role in the psychological and social development of individuals with disabilities. For instance, participation in physical activities has been linked

to improved self-esteem and social integration among children with hearing impairments (Warner-Czyz et al., 2015).

Therefore, our study aims to compare hearing-impaired individuals engaged in sports with their non-hearing-impaired peers in the same age group, focusing on specific performance characteristics such as reaction time, balance, coordination, and speed.

## METHODS

**Research Model:** The research model used in the study is a causal-comparative model. This model is used to examine the effect of a pre-existing difference between groups (in this case, hearing impairment) on certain variables.

**Purpose of the Research:** The primary aim of this study is to compare the athletic performance characteristics (reaction time, balance, coordination, and speed) of hearing-impaired individuals who actively engage in sports with their non-hearing-impaired counterparts of the same age group.

**Research Questions and Hypotheses**

This study addresses the following research questions:

1. Do hearing-impaired individuals engaged in sports exhibit different reaction times compared to their non-hearing-impaired peers?

2. Is there a significant difference in balance performance between hearing-impaired and non-hearing-impaired athletes?

3. How does coordination ability compare between hearing-impaired individuals and their peers without hearing impairments?

4. Are there notable differences in speed performance between the two groups?

Based on these questions, the following hypotheses are proposed:

H1: Hearing-impaired individuals engaged in sports have longer reaction times than their non-hearing-impaired peers.

H2: There is a significant difference in balance performance between hearing-impaired and non-hearing-impaired athletes.

H3: Coordination abilities differ between hearing-impaired individuals and their peers without hearing impairments.

H4: Speed performance varies between hearing-impaired and non-hearing-impaired individuals.

**Research Group:** The study involved 15 hearing-impaired male football players with an average age of 23.80±7.97 years, an average height of 177.27±6.10 cm, and an average weight of 74.15±13.66 kg, and 10 non-hearing-impaired male football players with an average age of 21.80±5.18 years, an average height of 178.20±3.82 cm, and an average weight of 72.31±11.04 kg.

**Data Collection:** All tests were conducted under the supervision of certified trainers in a controlled environment to ensure consistency. Participants were selected voluntarily from relevant sports clubs, and the tests were conducted over two consecutive days at Hasan Doğan Stadyumu and Orman Genel Müdürlüğü Halı Sahası.

1st Day: Height and weight measurements were taken, and performance tests assessing motor skills, such as agility and speed, were performed. 2nd Day: Balance and reaction tests were administered.

*Height Measurement*

The height measurements of the participants were measured in metres (m) with an accuracy of ±1 mm with a Holtain brand stadiometer without shoes, heels together, body and head upright, arms free at the side of the body.

*Body Weight Measurement*

Body weight was assessed using a Tanita scale, with a precision of 0.1 kg and the result was recorded in kilograms (kg).

*Agility Test - T test*

The test was performed following the protocol established by Semenick (1990), (Figure 1). Participants started by starting from point A and after a straight run forwards, after contacting funnel B with the right hand, they contacted funnel C using the left hand with a lateral sliding step to the left. Afterwards, he/she made a 10-metre sliding step to the right and made contact with the D funnel with the right hand and again made a 5-metre sliding step in the direction of the B funnel and made contact with his/her left hand. After contact was made at point B, the test was terminated by running back to point A and exiting the photocell. After 3 minutes rest, the test was applied again and the best degree was recorded. Seven Elektronik SE-160 brand photocell device was used in the application of the test. Three test trials were carried out and the times were measured by an electronic timing system (Seven Elektronik SE-160) with a precision accurate to one-hundredth of a second. Two electronic timing sensors mounted on tripods were placed approximately 0.75 m above the ground and spaced 3 m apart on either side of the starting line. The timing started as soon as the subjects passed the electronic sensors and stopped when they passed them again. Although the protocol is widely used to assess agility and speed, its application in hearing-impaired individuals is not extensively examined in the literature (Semenick, 1990).

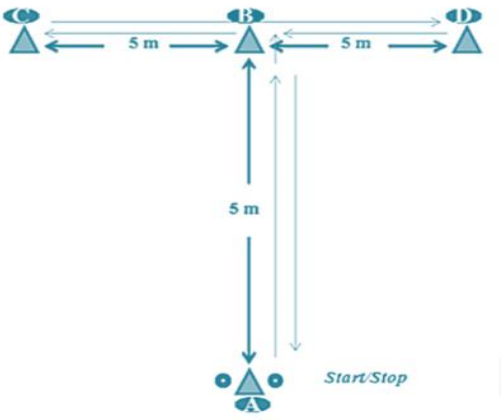


**Figure 1.** Agility t- test.

*Flamingo Balance Test*

A 50 cm long, 4 cm high and 3 cm wide slat was used for the flamingo balance test. The participant tried to stand barefoot on the slat for as long as possible in a posture similar to the flamingo posture (with the balance foot on the slat and the other foot bent so that it touches the knee). The participant was kept on the slat by holding the hand of the assistant to get initial support and when he/she felt ready, the time was started by releasing the support. When the balance was disturbed, the time was stopped and the balance disturbances within 1 min were recorded. The test of the participant who experienced more than 15 balance losses within the first 30 seconds was terminated and the score was recorded as zero. Although the Flamingo Test is widely used to measure static balance, its application in hearing-impaired individuals is underexplored in the literatüre (Wood, 2008).

*Nelson Hand Reaction Test*

For this test, participants were asked to place their forearms comfortably on the coffee table. The participants were instructed to keep the thumb and forefinger of their dominant hand parallel to the surface of the table with a little space between them. The participants were asked to focus on the centre of the ruler and to catch the ruler when the researcher released the ruler. When the participant grasped the ruler by pinching it between the thumb and forefinger, this point on the ruler was recorded in cm. The largest and smallest values were subtracted from a total of five measurements and the average of the remaining measurements was recorded as the distance the ruler fell (Stewart & Ellis, 2005).

*Speed Test*

A photocell with a sensitivity of 0.01 was placed at the start and end points of the test in a 30-metre area with predetermined exit and arrival lines in the hall, and the best of 2 trials was measured at 3-minute intervals. The participant exited 50 cm behind the start sensor (İmamoğlu et al., 2004).

All measurements and tests were carried out at Yenimahalle Hasan Doğan Stadium and Armada General Directorate of Forestry Carpet field.

**Analysis of Data:** Mean (Mean) and standard deviation (SD) values were used as descriptive statistics for all data. Normality tests of the data were performed using the Shapiro-Wilk test. Since the distribution of the data was not normal, the nonparametric Mann-Whitney U test was used to compare the data according to the groups. Statistical procedures were performed with SPSS 15 package programme, and the significance level was set at $p<0.05$.

## RESULTS

Descriptive statistics of the participants' age (years), sport experience (years), body weight (kg), height (m) and body mass index (BMI) are presented in Table 1.

**Table 1.** Descriptive statistics of the participants

| | Participants | N | Min. | Max. | $\bar{x}$ | S |
|---|---|---|---|---|---|---|
| **Age** | Normal | 10 | 17 | 32 | 21.80 | 5.18 |
| | Hearing Impaired | 15 | 17 | 40 | 23.80 | 7.97 |
| | Total | 25 | 17 | 40 | 23.00 | 6.94 |
| **Sport Experience (Years)** | Normal | 10 | 4 | 13 | 9.85 | 2.76 |
| | Hearing Impaired | 15 | 2 | 30 | 11.47 | 8.39 |
| | Total | 25 | 2 | 23 | 10.82 | 6.67 |
| **Weight** | Normal | 10 | 56 | 92 | 72.31 | 11.04 |
| | Hearing Impaired | 15 | 56 | 104 | 74.15 | 13.66 |
| | Total | 25 | 56 | 104 | 73.42 | 12.47 |
| **Height** | Normal | 10 | 174 | 185 | 178.20 | 3.82 |
| | Hearing Impaired | 15 | 169 | 189 | 177.27 | 6.10 |
| | Total | 25 | 169 | 189 | 177.64 | 5.23 |
| **BMI** | Normal | 10 | 18,12 | 30,39 | 22.85 | 4.03 |
| | Hearing Impaired | 15 | 18,50 | 32,18 | 23.62 | 3.99 |
| | Total | 25 | 18,12 | 32,18 | 23.31 | 3.94 |

Mean: Average, SD: Standard deviation, Min: Minimum, Max: Maximum

The average age of the normal and hearing-impaired individuals participating in the study was 23.00±6.94 years and the average height was 177.64±5.23 metres. The body weight of hearing impaired footballers was slightly higher than normal individuals. Hearing-impaired footballers have worked longer years of sportsmanship compared to normal individuals. In this study, in order to compare some performance characteristics of hearing impaired and normal football players, data and analysis results of reaction time in Table 2, balance in Table 3, coordination in Table 4 and speed parameters in Table 5 were presented.

**Table 2.** Mann Whitney-U Test results for participants' reaction scores

| | N | Ortc. | Rank Average | U | p |
|---|---|---|---|---|---|
| Regular Footballers | 10 | 9 | 7.75 | 127.500 | 0.002* |
| Hearing Impaired Footballers | 15 | 13 | 16.50 | | |

*p<0.05

The Mann-Whitney U test indicated a significant difference in reaction times between the two groups ($p < 0.05$), suggesting that hearing impairment affects reaction-related performance characteristics. The reaction scores of the football players without hearing impairment (mean =13) were significantly higher than the reaction scores of the football players with hearing impairment (mean =9) ($U=127.500$; $p=.002$). The difference between the groups in terms of reaction times was statistically significant ($p<0.05$) (Figure 2). The visual reaction-related quickness skills of football players without hearing impairment developed more than those of football players with hearing impairment.

**Table 3.** Mann Whitney-U Test results for participants' flamingo scores

| | N | Centre | Rank Average | U | p |
|---|---|---|---|---|---|
| Regular Footballers | 10 | 5.50 | 13.35 | 71.500 | 0.849 |
| Hearing Impaired Footballers | 15 | 5.00 | 12.77 | | |

p<0.05

According to Table 3, the Flamingo scores of regular footballers (mean = 13.35) were not significantly different from those of hearing-impaired footballers (mean = 12.77), as indicated by the Mann-Whitney U test (U = 71.500, p = 0.849), (Figure 2).

**Table 4.** Mann Whitney-U Test results for the participants' T Test scores

| | N | Centre | Rank Average | U | P |
|---|---|---|---|---|---|
| Regular Footballers | 10 | 10.75 | 14.15 | 63.500 | 0.531 |
| Hearing Impaired Footballers | 15 | 10.30 | 12.23 | | |

p<0.05

According to the Mann Whitney-U test findings in Table 4, the T Test scores of the athletes do not differ significantly according to the disability status. When the results of the agility test performed to determine coordination are analysed, it is seen that the values of normal football players (10,75) and hearing impaired football players (10,30) are very close to each other. The result of the statistical analysis shows that the difference between the two groups is not significant. (p>0,05) (Figure 2).

**Table 5.** Mann Whitney-U Test results related to 30m sprint values of the participants

| | N | Centre | Rank Average | U | P |
|---|---|---|---|---|---|
| Regular Footballers | 10 | 11.30 | 14.15 | 63.500 | 0.160 |
| Hearing Impaired Footballers | 15 | 15.55 | 12.23 | | |

p<0.05

According to the Mann Whitney-U test findings in Table 5, the 30m scores of the athletes do not differ significantly according to the disability status (p>0.05). Although there was no significant difference between the two groups, it was found that 30m sprint skills of hearing impaired footballers were at a higher level (Figure 2).

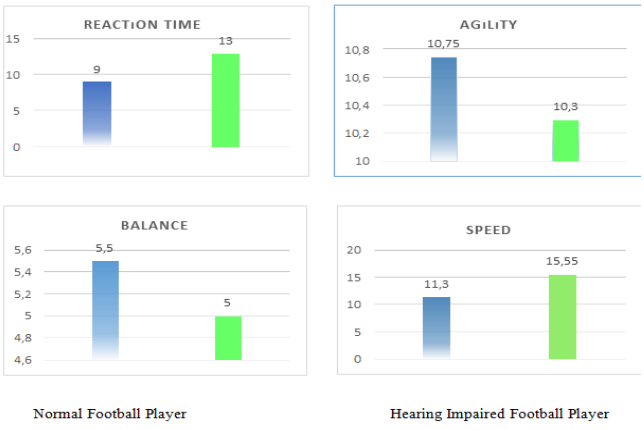


**Figure 2.** Comparative graphic between groups in terms of performance values

## DISCUSSION

In this study, reaction, balance, coordination and sprint data of hearing impaired football players and non-hearing impaired football players in their age groups were compared. As a result of the analyses, a significant difference was found only in reaction time between hearing impaired football players and non-disabled football players in their age groups.

When analysed in terms of balance, coordination, and sprint parameters, no significant difference was found between the two groups. This suggests that the hearing impairment did not significantly impact these specific motor skills. Visual reaction time and sprint skill levels, it can be said that hearing impaired football players are at a better level.

When the literature is examined, it is understood that the studies on hearing impaired individuals are quite comprehensive. Eliöz et al. (2013) examined the balance performances of hearing-impaired sedentary individuals, hearing-impaired football players and healthy football players without hearing impairment in a study applied to participants of similar age group (Eliöz et al., 2013). According to the results of the study, the average balance performance for hearing impaired sedentary individuals was found to be for hearing impaired football players and for healthy football players, and the difference in balance performance between the groups was statistically significant (p<0.01).

When analysed in terms of our study, although the mean values in terms of balance skill levels between disabled participants and non-disabled participants were similar, no significant difference was found in our study. In the aforementioned study, the static balance performance of hearing-impaired football players was better than that of hearing-impaired sedentary individuals, indicating that regular sports activities have a positive effect on static balance performance. However, the difference between hearing-impaired football players and healthy football players was in favour of healthy football players and this is thought to be due to their health.

However, more repetitive similar studies are needed in this field. There are similar studies conducted in different age groups. In a study conducted by Işık, (2013) on 26 hearing-impaired athletes (14 non-disabled wrestling athletes, 12 hearing-impaired regular exercisers) with an average age of 15.42 years, various motoric characteristics tests were applied to the participants (Ahmet, 2013). In terms of motoric characteristics, it was determined that hearing impaired athletes had better performance values in balance and flexibility tests, while in speed, strength, jumping and aerobic power tests, hearing impaired athletes had better performance values. In the 20-metre sprint test, non-hearing impaired athletes performed better, while in balance tests, hearing impaired athletes had higher performance values.

When analysed in terms of our study, these results are not similar. Although the speed values of the hearing impaired athletes participating in our study performed better than the athletes without hearing impairment, the performance values of the hearing impaired athletes were found to be lower in terms of balance performances. The differences in

performance may be related to variations in the participants' age groups, as well as the physiological demands of the respective sports and the athletes' physical adaptations.

Physical activity is defined as any kind of bodily movement that provides energy expenditure through skeletal muscles (Caspersen et al., 1985), in addition to the beneficial effects of regular physical activities in physical and physiological terms, the negative effects of prolonged inactivity have been strongly documented in many studies (Li et al., 2019; Organization, 2010; WHO, 13 May 2015). Erden (1995) stated that the performance parameters associated with the basic motoric characteristics of hearing impaired individuals progress with a delay compared to their healthy peers starting from early childhood (Erden, 1995).

In a study conducted by Ciğerci, et al., (2011) with a total of 40 male students, 11 volleyball players, 12 sedentary and 9 volleyball players, 8 sedentary, who are hearing impaired and 11 volleyball players, 12 sedentary and 9 volleyball players, 8 sedentary, who are not hearing impaired and who regularly do sports in the age range of 9-15 years, it was determined that disabled individuals were generally negatively affected in terms of some motoric characteristics such as reaction time, paw strength, standing long jump, balance, anaerobic power and agility (Ciğerci et al., 2011).

When the results are compared with our study, although the results are similar in terms of balance and agility performance, these results are not similar in terms of speed performance.

In another study conducted in different age groups, and others investigated balance performances in hearing impaired and non-hearing impaired children. In the study, 111 males and 70 females with hearing impairment and 46 males and 33 females without hearing impairment participated in the study and it was determined that the balance performance of the participants without hearing impairment was better than the participants with hearing impairment. They also stated that hearing had a positive effect on balance performance (Yağcı et al., 2004).

The inadequacies in the performance levels of hearing-impaired individuals may be attributed to a lack of adequate physical education, limited access to movement practices, and insufficient balance and muscle strength, which may hinder their ability to develop proper movement control. Although the small sample size is acknowledged as a limitation, it is important to consider that the differences in age and sports experience between the hearing-impaired and non-hearing-impaired groups may have influenced the results. Age-related factors, such as physical development, and the varying levels of sports experience may have contributed to the observed differences in motor performance. These demographic variables could have affected the participants' physical capabilities, and therefore, future studies should aim to control for these factors to provide more accurate insights into the impact of hearing impairment on motor performance.

In conclusion, the data from the study suggest that hearing impairment negatively affects some motoric characteristics, such as balance and agility, in hearing-impaired footballers. However, hearing impairment does not appear to negatively affect athletic performance in terms of speed and reaction time.

## Limitations

This study aimed to compare some motoric characteristics such as reaction time, balance, coordination and speed of hearing impaired and non-hearing impaired football players. When the findings were analysed, it was found that the reaction time of the football players without hearing impairment was better than that of the football players with hearing impairment, their sprint performance was at a similar level, but their balance and agility performances were at a lower level. These results reveal that regular physical activity participation of hearing impaired individuals plays an important role in improving their motor skills and contributes to their daily life activities. It also suggests that the effect of hearing impairment on athletic performance may vary according to the branch. The limitations of this study include the small number of participants, the groups of athletes working according to different training schedules, the exclusion of different age groups and branches, and the evaluation of motoric characteristics with only four parameters. These limitations reduce the generalisability of the results. In future studies, the motoric characteristics of hearing impaired athletes from different age, gender and branches should be examined more comprehensively and the effect of hearing impairment on sports performance should be analysed in depth.

***Ethics Statement:*** *In the present article, the ethical rules of the journal were followed in the research process in the current article. The responsibility for any violations that may arise regarding the article belongs to the author. The approval of Gazi University Ethics Committee dated 07.11.2023 and numbered E-77082166-604.01.02-797461 was obtained.*

***Conflict of Interest:*** *There is no personal or financial conflict of interest between the authors in the present study.*

***Author Contribution Rate:*** *In the present study, the contribution rates of all authors are equal.*

## References


Ahmet, I. (2013). *İşitme engelli ve işitme engelli olmayan spor yapan çocukların fiziksel ve motorik özelliklerinin karşılaştırılması* Niğde Üniversitesi]. https://acikerisim.ohu.edu.tr/xmlui/handle/11480/429.

Barboza, C., Ramos, A., Abreu, P., & Castro, H. (2019) Physical education: Adaptations and benefits for deaf students. *Creative Education*, **10**, 714-725. doi: 10.4236/ce.2019.104053.

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports*, *100*(2), 126.

Ciğerci, A. E., Aksen, P., Cicioğlu, İ., & Günay, M. (2011). 9-15 yaş grubu işitme engelli ve işitme engelli olmayan öğrencilerin bazı fizyolojik ve motorik özelliklerinin değerlendirilmesi. *Selçuk Üniversitesi Beden Eğitimi ve Spor Bilim Dergisi*, *13*.

Eliöz, M., Sitti, S., Koç, M. C., Murt, Z., & Koç, H. (2013). A study on static balance performance of healthy and hearing-impaired football players. *European Journal of Applied Sciences*, *5*(1), 25-28.

Erden, Z. (1995). *İşitme engelliler ve sağlıklı kişilerin motor fonksiyonlarının karşılaştırılması*, [Sağlık Bilimleri Enstitüsü].

Franciosi, E., Guidetti, L., Gallotta, M. C., Emerenziani, G. P., & Baldari, C. (2010). Contributions of selected fundamental factors to basketball performance in adult players with mental retardation. *J Strength Cond Res*, *24*(8), 2166-2171. https://doi.org/10.1519/JSC.0b013e3181e34754

Frontera, W. R. (2006). Research and the survival of physical medicine and rehabilitation. *American Journal of Physical Medicine & Rehabilitation*, *85*(12), 939-944. https://doi.org/10.1097/01.phm.0000248460.68575.65

Gür, A. (2001). *Özürlülerin sosyal yaşama uyum süreçlerinde sportif etkinliklerin rolü*. TC Başbakanlık Özürlüler İdaresi Başkanlığı.

Hutzter, Y., & Bar-Eli, M. (1993). Psychological benefits of sports for disabled people: A review. *Scandinavian Journal of Medicine & Science in Sports*, *3*(4), 217-228.

İmamoğlu, O., Bostanci, Ö., & Kabadayi, M. (2004). Beden Eğitimi ve Spor Bölümü Öğrencilerinde 30 Metre Koşu Ve Margaria Kalamen Anaerobik Güç İlişkisinin AraştirilmasI. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi*, *2*(4), 147-154.

Jaarsma, E. A., Dijkstra, P. U., Geertzen, J. H., & Dekker, R. (2014). Barriers to and facilitators of sports participation for people with physical disabilities: a systematic review. *Scand J Med Sci Sports*, *24*(6), 871-881. https://doi.org/10.1111/sms.12218

Karakoç, Ö., Çoban, B., & Konar, N. (2012). İşitme engelli milli sporcular ile spor yapmayan işitme engellilerin benlik saygısı düzeylerinin karşılaştırılması. *Selçuk Üniversitesi Beden Eğitimi ve Spor Bilim Dergisi*, *14*(1), 12-17.

Kosel, H. (1981). *Behindertensport: Körper-und Sinnesbehinderte; Handbuch für Sportlehrer, Übungsleiter, Ärzte, Krankengymnasten, Erzieher und Studierende*. Pflaum.

Li, C., Haegele, J. A., & Wu, L. (2019). Comparing physical activity and sedentary behavior levels between deaf and hearing adolescents. *Disability and Health Journal*, *12*(3), 514-518.

Organization, W. H. (2010). Global recommendations on physical activity for health. *World Health Organization*.

Semenick, D. (1990). Tests and measurements: The T-test. *Strength & Conditioning Journal*, *12*(1), 36-37.

Stewart, D. A., & Ellis, M. K. (2005). Sports and the deaf child. *American Annals of the Deaf*, *150*(1), 59-66.

Tamer, K. (2000). *Sporda fiziksel-fizyolojik performansın ölçülmesi ve değerlendirilmesi*. Bağırgan Yayınevi.

Warner-Czyz, A.D., Loy, B.A., Evans, C., Wetsel, A., & Tobey, E.A. (2015). Self-esteem in children and adolescents with hearing loss. Trends Hear. 2015 Mar 9;19:2331216515572615. doi: 10.1177/2331216515572615. PMID: 25755025; PMCID: PMC4355008.

WHO. (13 May 2015). *World Health Statistics 2015*. World Healt Organization. Retrieved 27 December from https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/world-health-statistics

Wood, R. (2008). Flamingo balance test. *Topend Sports Website*, 1295-1300.

Yağcı, N., Cavlak, U., & Şahin, G. (2004). İşitme engellilerde denge yeteneğinin incelenmesi üzerine bir çalışma. KBB-Forum.

## GENİŞLETİLMİŞ ÖZET

### Çalışmanın Amacı

Bu araştırmada spor yapan işitme engelli bireyler ile kendi yaş gruplarındaki işitme engeli olmayan bireylerin bazı performans özellikleri, özellikle çeviklik, sürat, denge ve reaksiyon açısından karşılaştırılması amaçlanmaktadır.

### Araştırma Problemleri

1. Sporla uğraşan işitme engelli bireyler, işitme engeli olmayan akranlarına kıyasla farklı reaksiyon süreleri sergiliyor mu?

2. İşitme engelli ve işitme engeli olmayan sporcular arasında denge performansında anlamlı bir fark var mıdır?

3. İşitme engelli bireylerin koordinasyon becerileri, işitme engeli olmayan akranlarıyla nasıl karşılaştırılır?

4. İki grup arasında sürat performansı açısından belirgin farklılıklar var mıdır?

### Hipotezler

C1: Sporla uğraşan işitme engelli bireylerin tepki süreleri, işitme engeli olmayan akranlarından daha uzundur.

C2: İşitme engelli ve işitme engeli olmayan sporcular arasında denge performansında anlamlı bir fark vardır.

C3 İşitme engelli bireylerin koordinasyon becerileri, işitme engeli olmayan akranlarından farklıdır.

C4: İşitme engelli ve işitme engeli olmayan bireyler arasında sürat performansı değişiklik gösterir.

### Literatür Araştırması

Önceki araştırmalar, engelli bireylerin dünya nüfusunun önemli bir kısmını oluşturduğunu ve genellikle gelişmekte olan ülkelerde yaşadıklarını göstermektedir (WHO, 13 May 2015). Engellilik, bireyin çevresiyle olan fiziksel ve psikososyal etkileşimlerinde önemli bir kısıtlama olarak belirtilmektedir (Hutzter & Bar-Eli, 1993) engelliliği bireyin bozulmuş beden deneyimi ve toplumun damgalayıcı

tutumlarının yansıması olarak tanımlamıştır. Fiziksel aktivitenin engelli bireylerin rehabilitasyonunda hem fiziksel hem de psikolojik açıdan faydalı olduğu çeşitli çalışmalarla desteklenmiştir (Karakoç et al., 2012; Kosel, 1981).

**Yöntem**

Araştırmaya, yaşları ortalama 23.80±7.97 yıl, boyları ortalama 177.27±6.10 cm ve vücut ağırlığı ortalama 74.15±13.66 kg olan 15 işitme engelli erkek futbolcu ile yaşları ortalama 21.80±5.18 yıl, boyları ortalama 178.20±3.82 cm ve vücut ağırlığı ortalama 72.31±11.04 kg olan 10 işitme engelli olmayan erkek futbolcu gönüllü olarak katılmıştır. Katılımcılar, ilgili spor kulüplerinden gönüllü olarak seçilmiş ve testler Hasan Doğan Stadyumu ve Orman Genel Müdürlüğü Halı Sahalarında birbirini izleyen iki gün boyunca uygulanmıştır.

1. Gün: Boy uzunluğu, vücut ağırlığı ölçümleri ve motorik özellikleri belirleyici performans testlerinden çeviklik ve sürat testleri gerçekleştirilmiştir.

2. Gün: Denge ve reaksiyon testleri uygulanmıştır.

**Sonuç ve Değerlendirme**

Analizler sonucunda, işitme engelli futbolcular ile işitme engeli olmayan futbolcular arasında sadece reaksiyon süreleri açısından anlamlı bir farklılık bulunmuştur. İşitme engeli olmayan futbolcuların reaksiyon süreleri, işitme engelli futbolculara göre daha iyi bulunmuştur. Ancak denge, koordinasyon ve hız parametreleri açısından gruplar arasında anlamlı bir farklılık saptanmamıştır. Bu sonuçlar, işitme engelinin belirli motorik beceriler üzerindeki etkilerini anlamak ve işitme engelli bireylerin sportif etkinliklerdeki performanslarını değerlendirmek açısından önemlidir.