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Investigation of Some Physical Parameters of Elite Hearing Impaired Judo and Taekwondo Athletes

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ABSTRACT

Being disabled is not an obstacle for upgrading one's standards of living. Sports are an important factor that serves this particular purpose and enables the disabled to hold on to their lives. The aim of this study was to investigate of some physical parameters of elite hearing impaired judo and taekwondo athletes. 8 Judoka (age: 26.75±5.34 years; weight: 82.50±11.63 kg; height: 176.88±6.38 cm) and 11 Taekwondo athletes (age: 26.45±5.02 years; weight: 63.45±10.50 kg; height: 174.18±7.96 cm) that are hearing-impaired, participated in the study. Results were obtained using Mann-Whitney U Test, as average±SD. Significance values were analyzed in the statistics program and found to be $p<0.05$. No significant difference was found in between groups in the values obtained in the measurement of physical characteristics (except for subscapularis and body weight). As a result, because the neglected hearing loss causes slow learning and behavioral problems in athletes, problems especially in the participation of sports can be seen among them. Despite that, hearing impaired individuals are not much different than hearing individuals, in terms of physical fitness. However, hearing impaired individuals doing sports at an elite level, want to have more opportunities to participate in the sport of their choice. In particular, as they face their peers, the indifference regarding communication that they face, would also be reduced. Therefore, hearing impaired individuals need factors like sports to strengthen the communication skills in between themselves. Also one reason for the lack of significance in terms of physical characteristics, branches of participants have similar features.

KEYWORDS: Hearing-impaired, Judo, Taekwondo.

INTRODUCTION

Disabled individuals, in any age period, can interact with normal individuals and can establish social relations with them. However, the difference in their classification and degree of their disability, not just affects their lifestyle but also the individuals that they interact with. Hearing-impaired children in disability groups are not much different from hearing children in terms of physical fitness. Differences depending on the age and gender differences in performance were observed [1]. Social and emotional development of hearing impaired children, also trace similar patterns of their hearing peers. In very young ages, communication differences between hearing impaired children and their hearing peers do not create obstacles in common game. Games can be played mutually, and friendships can develop [2].

Children with corrected hearing impairment, using instruments can participate in regular physical training activities. This hearing impairment can be classified from "mild" to "severe". Children with irreparable severe hearing impairment require special care and attention. They need visual input, rather than verbal.

Demonstration, written explanation, cards or videos are usually the effective educational tools used for these deaf children [1].

Hearing loss can be partial or full. However, neglected hearing impaired children, because they have severe learning and behavioral problems, may especially experience problems in participation in sports. Despite that, hearing impaired children are not much different from hearing children in terms of physical fitness. They are similar to hearing children in terms of body composition, strength, flexibility, speed and cardiovascular endurance measurements. Differences in performance can be seen depending on the age and gender differences. Males are better than girls in other measurement excluding flexibility. Among the hearing impaired children, older ones are in better condition regarding physical fitness, compared to younger children with hearing impairment. It is recommended for coaches and physical educators, to evaluate hearing impaired students using the same physical fitness standards that are used for the assessment of hearing students and to expect them to reach to the same health related fitness standards, with their hearing peers [3].

Sports among hearing impaired, like any other disability groups, are mainly aimed at eliminating the inequalities that exist in the society, through sporting activities. Hearing impaired individuals do not have the same social and cultural amenities as hearing people do, because of their sensory loss. One of the main reasons of this is their preference to communicate mostly with each other, and their avoidance of the other individuals within the society [4]. It's been seen that competitive sports like Taekwondo and Judo, play an important role in their self-esteem and physical and social development. Taekwondo is a full balance and coordination sport that requires much elasticity and quickness, and gains fast thinking and decision making abilities, in which punches and kicks are used. Judo also is one of the most popular martial arts that require balance, close contact and force. Individuals with hearing loss usually experience balance problems. These athletes gain the properties of keeping calm, to get out of complicated situations, fast thinking and while they practice this sport, they engage in holding, throwing, locking, to get their opponents to give up, defense techniques, using their hands, feet, hips, and shoulders, developing their mobility.

Sports are especially important for these individuals for gaining self-confidence and proving their self-existence in the society. The success that they might gain in sports would help them to hold on to life and show that they are a part of the society. In this study, it is aimed to investigate some of the physical parameters of hearing impaired judo and taekwondo athletes.

MATERIAL AND METHOD

8 Judoka (age: 26.75±5.34 years; weight: 82.50±11.63 kg; height: 176.88±6.38 cm) and 11 Taekwondo hearing impaired national team athletes (age: 26.45±5.02 years; weight: 63.45±10.50 kg; height: 174.18±7.96 cm) participated in the study. All the participants have been informed of the study and the necessary approvals are taken.

Such as age, height, weight and some physical measurements of athletes were evaluated (12 minutes of jogging, hand-grip strength, leg strength, sit-up and push-ups). The resulting data was evaluated as average±SD, using the Mann-Whitney U test. Significance values were analyzed in the statistical program as $p<0.05$ level.

Findings:

Table 1: The average height, body weight and age values of athletes.

Parameters	Judo (N=8)				Taekwondo (N=11)				z	p
	Min.	Max.	X	SS	Min.	Max.	X	SS		
Height (cm)	167.00	187.00	176.88	6.38	165.00	186.00	174.18	7.96	-0.87	0.40
Body weight (kg)	69.00	108.00	82.50	11.63	49.00	75.00	63.45	10.50	-3.22	0.00**
Age (years)	19.00	33.00	26.75	5.34	19.00	32.00	26.45	5.02	-0.68	0.35

**p<0.01

The athletes' average values of physical attributes such as height, body weight and age are given in table 1. However, there was no significant difference between the groups except for body weight.

Table 2: Physical Characteristics of Athletes.

Parameters	Judo (N=8)				Taekwondo (N=11)				z	p
	Min.	Max.	X	SS	Min.	Max.	X	SS		
12 min. jogging (m)	2400.00	2850.00	2618.75	143.77	2100.00	3170.00	2717.73	331.75	-0.75	0.49
Hand grip (right) (kg)	42.10	55.00	48.16	4.02	25.90	52.10	41.45	8.50	-1.57	0.13
Hand grip (left) (kg)	42.50	52.80	46.61	3.63	23.60	54.20	40.66	10.07	-1.32	0.21
Leg strength (kg)	107.50	194.60	150.64	26.66	70.50	158.00	123.73	30.50	-1.50	0.15
Sit ups (30 sec)	27.00	42.00	36.25	6.25	24.00	55.00	38.27	8.98	-0.13	0.90
Push ups (30 sec)	26.00	53.00	40.00	9.02	23.00	47.00	35.73	8.06	-1.08	0.31

In Table 2, it can be seen that compared to the average values of Taekwondo athletes, Judo athletes have higher values ($p<0.01$). There are no significant differences between groups in physical characteristic parameters.

Table 3: Anthropometric Measurements of athletes.

Parameters	Judo (N=8)				Taekwondo (N=11)				z	p
	Min.	Max.	X	SS.	Min	Max.	X	SS		
Biceps (mm)	6.00	11.00	7.40	1.67	5.20	11.00	7.07	1.78	-0.46	0.66
Triceps (mm)	7.10	20.00	10.44	4.24	6.30	20.00	10.41	4.08	-0.16	0.90
Subscapularis (mm)	15.80	27.00	20.18	4.18	9.30	17.00	13.67	2.36	-3.14	0.00
Abdominal (mm)	11.00	40.00	20.19	8.92	7.10	38.00	18.05	9.37	-1.16	0.27
Suprailiac (mm)	7.00	20.00	10.12	4.16	6.00	20.30	10.97	4.35	-0.12	0.90
Tight (mm)	7.30	20.00	12.13	4.28	10.10	40.00	17.55	8.49	-1.57	0.13

**p<0.01

In Table 3, when we look at the athletes' anthropometric measurements (biceps, triceps, subscapularis, abdominal, suprailiac and tight), there were no significant differences between groups. Only the subscapularis of judoka showed a higher value of significance ($p<0.01$).

Discussion And Conclusion:

Elite hearing impaired individuals want to have more opportunities to participate in the sport of their choice. Especially if they compete with their peers, their lack of interest regarding hearing in communication will fade away in time. Thus, it is necessary to strengthen the communication between hearing impaired individuals. Literature tells us that hearing impaired athletes need additional support and motivation in their own sport branch [5].

The average height, body weight and age values of athletes are recorded. It is observed that there hasn't been found any significant difference between the groups except for body weight in this study. When we compare in this regard, Taekwondo requires more movement and agility. However Judo has no extreme violence, rude movement, and excess power. Of course, Taekwondo and Judo are sports of competition and fighting, which required power and skill, and also technical and biomechanical competition effort [6, 7, 8]. In this regard both include important attributes that contribute to the development of hearing impaired children.

The average values for physical fitness attributes such as running, hand grip strength, leg strength, sit ups and push-ups for the hearing impaired taekwondo athletes, were found to be lower than the ones that judoka have ($p<0.01$), however, there was no significant difference in between the groups regarding physical measurement parameters. In Judo, there is a force transfer as it requires the use of hands with the opponent. Grip strength is used, according to the use of pulling, holding and tossing. There are differences even when the opponent is grabbed from different parts of his/her suit [9]. Thus it is possible for the grip strength of Judoka is different than the strength that taekwondo athletes have.

The thing that we especially try to stress in our research is that, the hearing impaired athletes, do not lack anything regarding physical fitness, compared to the hearing individuals, and even in some parameters, depending on the training, their values can even be higher than normal hearing individuals. Especially with regular training programs, improvements on flexibility, agility and muscular endurance parameters can be achieved [10].

When we look at the anthropometric measurements, it can be seen that the athletes have significantly lower values, and when compared with sedanteries in the literature, there is more meaningful significant differences based on body fat index [11]. There usually is a significant relationship between the general strength and endurance and lean body mass. Studies show that people who do combat sports like Judo or Taekwondo, have a low fat percentage [6, 12].

There were no significant differences in between the values of groups' physical measurement parameters such as 12 min jogging, hand grip strength (right and left), leg strength, sit ups and push-ups. In the anthropometric measurements of the athletes (biceps, triceps, subscapularis, abdominal, suprailiac and tight), no significant differences were observed within the new groups. However, the subscapularis values of Judoka have shown a more significant meaning ($p<0.01$). Both branches do studies directed at the use of upper extremities. However, Judo is a competitive sport, compared to Taekwondo, is more efficient regarding the use of body and apart from hit and run, and has more intense contact with opponent. Literature was that elite judo athletes have a higher fat-free mass and thicker upper-body muscles compared with judo athletes of lower performance level

[13]. However, the athletes of two branches have to distribute their level of endurance in terms of performance throughout the whole match

As a result, whatever the disability classification is, these individuals should have regular physical activity habits, in order to adapt healthier lifestyle options. Hearing loss can be partial or full. However, neglected hearing loss, because it causes slow learning and behavioral problems, cause some problems especially in participation to sports activities. Despite that, hearing impaired individuals, are not much different regarding physical fitness, compared to their hearing peers. They are quite like the hearing peers when it comes to the body composition, strength, flexibility, speed and cardiovascular endurance measurements. Differences based on age and gender can be observed in performance. However, elite hearing impaired individuals want to have more opportunities to participate in the sport of their choice. Especially if they compete with their peers, their lack of interest regarding hearing in communication will fade away in time. Thus, it is necessary to strengthen the communication between hearing impaired individuals.

There are some issues that need to be addressed by the trainers and educators that work with hearing impaired athletes. Being constantly located in a visible spot, combining visual and aural inputs as much as possible, to avoid being loud and not to shout, to be patient, to speak clearly and slowly, to use demonstrations and signs. These issues will help them to increase the performances of the disabled children.

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