

A COMPARATIVE ANALYSIS OF SHOT PUT RESULTS ACHIEVED BY CHILDREN AND ATHLETES WITH HEARING LOSS

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Abstract. *One of the sports which are available to children with hearing impairment is the shot put, an athletic discipline which contributes to the development of strength, speed, specific endurance and agility. This research was carried out with the aim of comparing results achieved in the shot put at the National Games organized for elementary schoolchildren with hearing impairment in the period from 2005 to 2015, in order to determine the movement of the results and the popularization of sport among this population of schoolchildren. The participants were male and female schoolchildren attending schools for the hearing impaired in the Republic of Serbia, who were diagnosed with hearing loss exceeding 60 dB, aged up to 15. Any deviations in the results between schoolchildren with hearing impairment of both genders from Serbia and the results obtained around the world can be explained by a still insufficient participation both in the shot put and in sports activities in general for the members of this population. It should be pointed out that based on the cited data, hearing impaired children do show interest in the shot put, and it would be desirable to work on their inclusion in competitions with children without hearing loss, for the purpose of improved socialization and the participation of experts of various profiles who could help these children achieve improved health and improved quality of life.*

Key words: *athletics, hearing loss, inclusion, school sport.*

INTRODUCTION

The existing definitions of sport can be expanded by the inclusion of another large and specific field – sports for specific groups of people (Arsić & Stanković, 2013). Sports for specific groups of people include sports activities involving a significant number of individuals with a joint group characteristic (Mašić, Mihajlović, & Avdagić, 2010). Furthermore, one of these specific groups involves people with disabilities or as they are referred to today “special needs individuals”, though official documents cite the term “disability”. In Western terminology these sports activities are referred to as “disability sports” or “disabled sports”. Sport for special groups, as it is often referred to, is a means of improving the physical characteristics of special needs group, the adaptation and socialization in regards to the social environment in which a disabled person resides, as well as dispersing any negativity towards people with disability. This term could be applied both to individuals with inborn (up to the age of 7) and acquired (from the age of 7) physical and psychological disorders, which impair or hinder daily functioning and activities (Arsić & Stanković, 2013). Sport for special groups can provisionally be divided into recreational, rehabilitation or competitive sport, whose roots can be traced back to the 19th century. The first serious progress was noted at the end of the Second World War. Namely, it turned out that there was large number of soldiers with a disability who wanted to continue their physical and sport activities to the extent that their disability allowed. The historical development of the deaf has indicated that hearing impaired individuals are able to not only enjoy sports activities but to also organize them and maintain leadership positions within them. Sports competitions organized solely for individuals with hearing impairment - The Silent Games were organized for the first time in 1888. They take place over a four-year cycle, one year after the Olympic Games. A precondition for participation is a loss of hearing greater than 60dB. The following sports are available to them: athletics, badminton, basketball, beach volleyball, rowing, cycling (track disciplines), orienteering, archery, swimming, ping pong, taekwondo, tennis, soccer, handball, judo, karate, volleyball, water polo, wrestling (Greco-Roman and freestyle), alpine skiing, Nordic skiing, carling, hockey, snowboarding. Sports activities for the hearing impaired differs from sports activities for individuals with other types of disability since 'deaf individuals are not disabled in any other way other than means of communication' and sports rules for hearing impaired athletes have not been altered in comparison to those applicable to athletes with normal hearing. Stewart (1991; 2006) defines sports activities for the hearing impaired in three dimensions and spheres: the social, psychological and educational. The socialization of the hearing impaired and their participation in society represent the most important goal for every hearing impaired individual. Stewart further cites that: „the nature of sport among the deaf is to promote their mutual interaction“. Sports activities among the hearing impaired also encourage psychological health so that these individuals identify themselves based on their belonging to a group, which enables them access to a system of social support. In addition, sports activities of the hearing impaired also have an educational component and values which are manifested in hearing impaired individuals learning through sports activities and working together toward a common goal (Arsić & Stanković, 2013). Stewart further cites that sport offers a joint basis for almost all types of ethnic and social groups the world over, and the deaf community is not an exception. Class, school or municipal sports teams – represent an important source of identification for each individual member of the deaf community. In addition, sport

among the hearing impaired enables socialization within and between these individuals since athletes in their desire to win outshine all the pre-existing prejudices and focus on the similarities between the hearing impaired and individuals or groups with normal hearing.

In addition, it has been shown that the parents of hearing impaired children who are also hearing impaired themselves have a very positive opinion on the advantages that sports activities bring, and their children more frequently and to a greater extent participated in them. In his study, Stewart (1991) has proven that hearing impaired children who during their education have accommodation in the dormitories of "special" boarding schools have a lot more possibilities but also desire for physical activity in comparison to children who are still living with their parents. At the same time, he indicated that hearing impaired children whose parents have normal hearing are more limited in terms of physical activities. The justification is that these children are not to be found on the street or the playground due to the unsuitable environment. Sherrill (1986) in her study dealt with the problem of the stigmatization of athletes with disability, depending on their type of disability. She determined that of the individuals without a handicap, the category of athletes with the least amount of social stigma are those with sensory impairment (sight, hearing, speech), while those with the most social stigma are those with mental disabilities. She determined that this social stigma exists even within the population of disabled athletes themselves. Athletes with a physical disability indicate an aversion towards individuals with a mental disability since they believe that the difference in their abilities and performance skills are great and that the prejudices that others have towards mentally disabled athletes are transferred onto athletes with a physical disability, and are just a continuation of pre-existing prejudices, which hinders the social position and social status of physically disabled athletes.

The idiosyncrasies of the development of motor skills among children with hearing impairment were generalized for a variety of reasons which lead to the disruption of the functions of certain parts of the body. Current studies have compared the results achieved by children with hearing impairment in comparison to the population with normal hearing. Almost all the studies have dealt with the similarities which exist between hearing impaired and children with normal hearing, and drew the conclusions that there are almost no differences between them if we were to take into consideration their psychomotor skills. In most of the literature that is to be found on the topic, the role of the vestibular apparatus was marked as the most prominent one for the development of motor skills (Arsić&Stanković, 2013). Accordingly, considering that the sense of hearing is closely connected to balance, the greatest differences were noted for the use of balance between these two groups of children, that is, in the disciplines in which this sense is used most; both static and dynamic (Barabas, 1990; Grimmet, 2004). The aforementioned authors have also determined that there are differences both in terms of coordination and speed, and thus explosive strength between children with hearing impairment and children with normal hearing.

School sport represents an activity where children voluntarily take part in school sports programs. Due to the significance of physical activity for the harmonious development of children and the young, school sport has deserved a prominent position in the realization of the physical education curriculum (Milojević & Stanković, 2010). Stewart (2006) considers that the term 'sport for the hearing impaired refers to sports activities aimed for the hearing impaired, as well as other activities related to the organization of sports activities for those with hearing loss and the spectators interested in watching them. Sports for the hearing impaired are organized in a special setting, so that, for example, in athletics, water polo

and swimming, instead of firearms or a whistle, which are used to mark the beginning of a race, a flag is used, or a light as the signal for the players to begin. Competitions for hearing impaired schoolchildren in Serbia are organized within school facilities (with a minimal use of sports fields and gyms of the local community), with judges from the local community. The schoolchildren participate in the following sports: athletic disciplines: the 60m sprint (female pioneers) and the 100m sprint (female juniors); the 100m sprint (male pioneers and juniors); the 200m sprint (female pioneers) and 300m sprint (female juniors) and 400m sprint (male pioneers and juniors); the standing jump; the depth jump; shot put; indoor soccer; basketball and volleyball (Arsić, Zrnzević, & Krulj-Drašković, 2011)¹.

The shot put is an athletic discipline in which the competitor attempts to throw the shot as far as possible. This athletic discipline serves to develop strength, speed, specific endurance and agility (Bosen, 1985). Balls of various weights are used in the competition (in accordance with the age and gender of the competitor), and they can be thrown in a variety of different ways. This research was carried out with the aim of comparing the results achieved in the shot put during national league games organized for elementary schoolchildren with hearing loss, from 2005 to 2015, in order to determine the progression of the results and the popularization of sport in this population.

METHODS

The research was carried out after the necessary data was gathered, cited in the competition bulletins, with six shot put competitions at the National Games organized for schoolchildren with hearing impairment.

The participants were male and female schoolchildren attending schools for the hearing impaired in the Republic of Serbia, who were diagnosed with hearing loss exceeding 60 dB, aged up to 15. In 2005, 2006, 2008 and 2010 there were 9 participants each, in 2012 and 2015 there were 10 participants, and in 2014 there were 12 male participants. In the case of the female participants, in 2005, 2012 and 2014 there were 10 of them, in 2008, 2010 and 2015 there were 11 each year and in 2006 there were 9. The competitions for elementary schoolchildren are organized every year by the teachers of the schools for the hearing impaired in the Republic of Serbia, and sponsored by the Ministry of Education, Science and Technological Development of the Republic of Serbia. They can be found in the Ministry's calendar of annual competitions.

The competitions were carried out according to the rules of the IAAF, and the competition propositions of the Athletics Federation of Serbia (AFS). The male schoolchildren threw a shot weighing 4 kg, and the female schoolchildren threw a shot weighing 3 kg. During one competition they threw a shot three times, and for the purpose of this study, only the best, farthest throw was taken into consideration. Thus, the variables used in this study were the results achieved in the shot put in 2005, 2006, 2008, 2010, 2012, 2014 and 2015 by male and female schoolchildren. Once the data were collected and sorted, a statistical analysis was carried out and the descriptive parameters were determined. Moreover, the trend analysis was conducted for the long term tendencies in shot put results development.

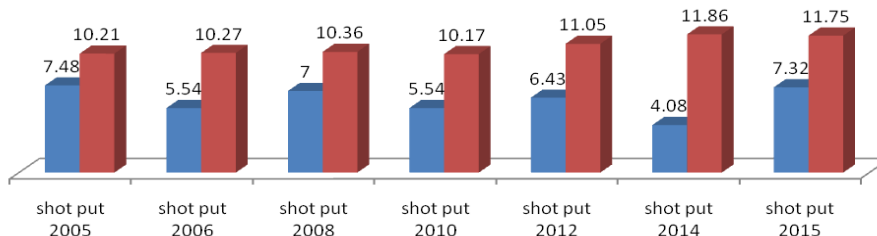
¹ pioneers – children under 16 age, juniors – youth under 20 age

RESULTS

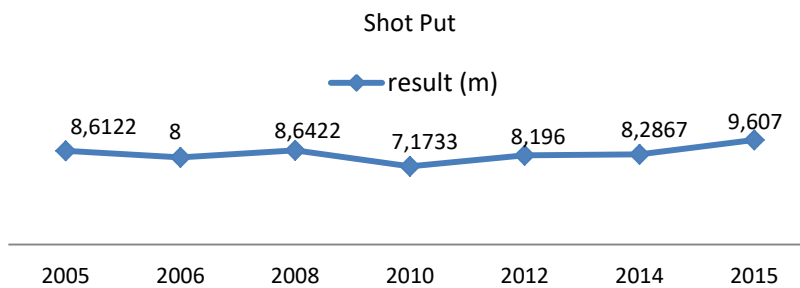
Table 1 Descriptive parameters of the results for the shot put for the male participants

Variables	N	Rank	Min	Max	M	SEM	SD	VAR	KC test
Shot put 2005	9	2.73	7.48	10.21	8.61	0.29	0.88	0.78	0.40
Shot put 2006	9	4.73	5.54	10.27	8.00	0.55	1.66	2.76	0.56
Shot put 2008	9	3.36	7.00	10.36	8.64	0.38	1.13	1.29	0.39
Shot put 2010	9	4.63	5.54	10.17	7.17	0.55	1.66	2.75	0.57
Shot put 2012	10	4.62	6.43	11.05	8.20	0.42	1.32	1.75	0.55
Shot put 2014	12	7.78	4.08	11.86	8.29	0.65	2.25	5.08	0.80
Shot put 2015	10	4.43	7.32	11.75	9.61	0.44	1.39	1.92	0.35

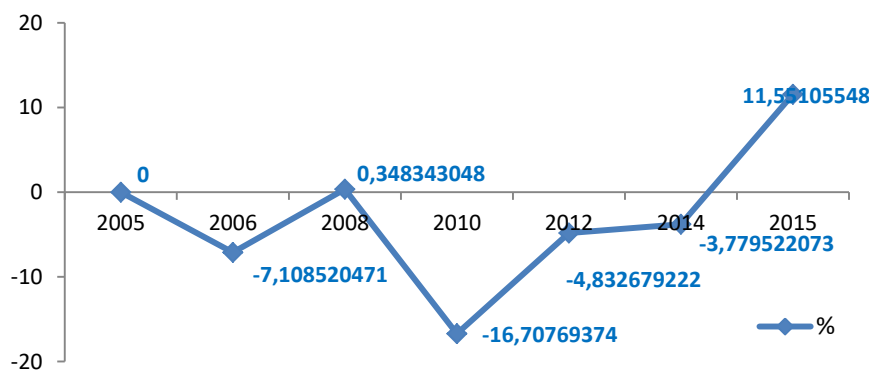
Table 1 shows that the best maximum result for the shot put in the population of male schoolchildren was achieved in 2014 with a distance of 11.86 m and the lowest result was noted in 2010 with a distance of 10.17m (Graph 1). However, if we were to compare the arithmetic means of the results (Graf 2), we can note that the best results were achieved in 2015 with an average 9.60m and the lowest results in 2010 with a distance of 7.17 m. The greatest difference between the achieved best and lowest results for the shot put was in 2014, with a value of 7.78 m.



Graph 1 The relation between the highest and lowest results achieved for the shot put per year, in the population of male schoolchildren

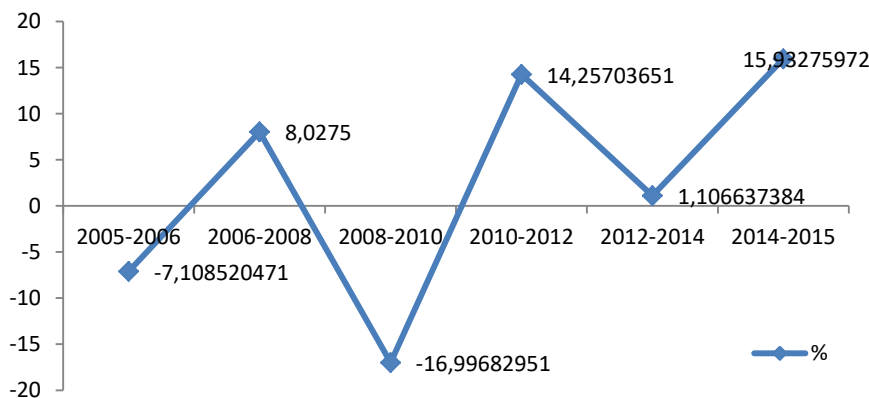


Graph 2 Overview of the average values of the results achieved for the shot put in the men's competition



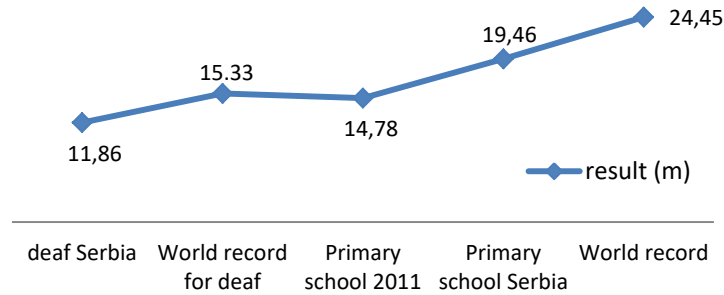
Graph 3 Overview of the oscillations in the results achieved for the shot put in comparison to the first year, in the men's competition

In the further analysis of the results (graph 3) achieved for the population of boys, based on the assumption that what is being compared are the results achieved in 2005 and the results achieved during the following few years, we can note that during the following years, the average value of the results was 7.11% lower, that in 2008, it was higher by 0.35%, that in 2010 it was lower by 16.71%, and that it was also lower in 2012 (4.83%) and in 2014 (3.78%), while the greatest increase in the results was recorded in 2015 – an increase by 11.55%.



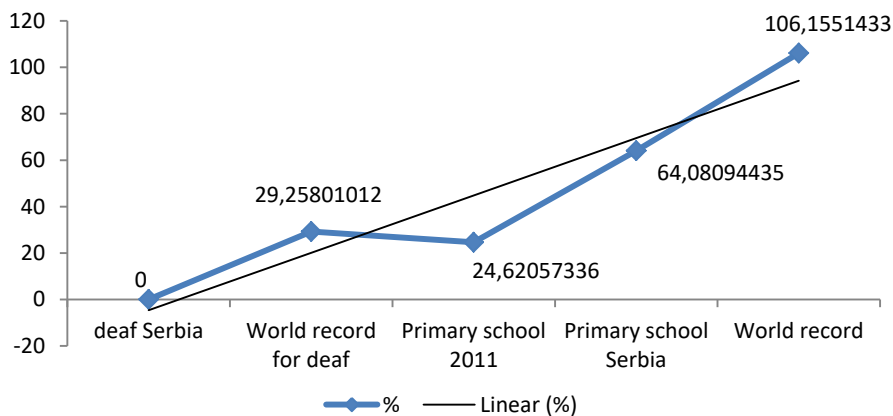
Graph 4 Overview of the oscillations in the results achieved for the shot put in comparison to the previous year, in the men's competition

However, in order to gain insight into the oscillation of the results during the ten years of the boys' competition, we analyzed the differences in the mean values of the results in comparison to the previous year (graph 4). The greatest difference noted between the mean values of the results achieved in the current year when compared to the previous year was in 2010, when the mean value of the results achieved during that year was lower compared to the previous one by 17.00%, while the greatest improvement in the mean values of the results was recorded in 2012 in comparison to 2010 (14.26%) and 2015 in comparison to 2014 when the result was higher by 15.93%.



Graph 5 The best results and records in the population of males

In addition, it is interesting to note the values of the best results in the men's competition, when analyzing the best results achieved by hearing impaired boys in Serbia in comparison to the best results achieved for the shot put in various categories (graph 5). Graph 5 shows a comparison of the top results in several categories. As expected, the lowest results were achieved by the hearing impaired pioneers in Serbia, since in comparison to the number of children attending elementary schools in Serbia this population is very small. But, if we were to compare it with the national competition for elementary schools held in 2011 then this difference decreases. At the same time, the world record for pioneers with hearing impairment is not drastically different in comparison to the pioneers with hearing impairment in Serbia. The only big difference was noted between the world record holder for the pioneer age group (24.45m and the results which pioneers with hearing impairment achieved, which have a value of 11.86m.



Graph 6 The differences in the top results achieved by the population of hearing impaired boys from Serbia and the results achieved in different categories expressed in percentages

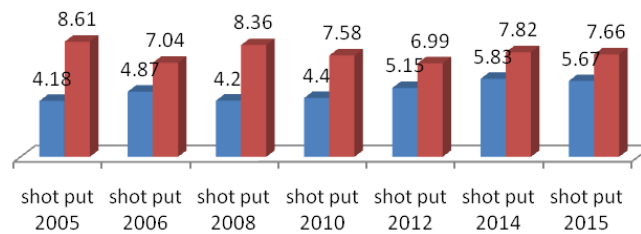
By analyzing the best results in Serbia achieved by hearing impaired boys in comparison to the best results achieved in various categories (graph 6), we can note that the record in

Serbia is 29.26% lower than the world record for hearing impaired boys, and that it is 64.08% lower than the record for Serbia for hearing impaired boys, while a statistically significant difference was determined compared to the world record for boys without hearing impairment (106.16%).

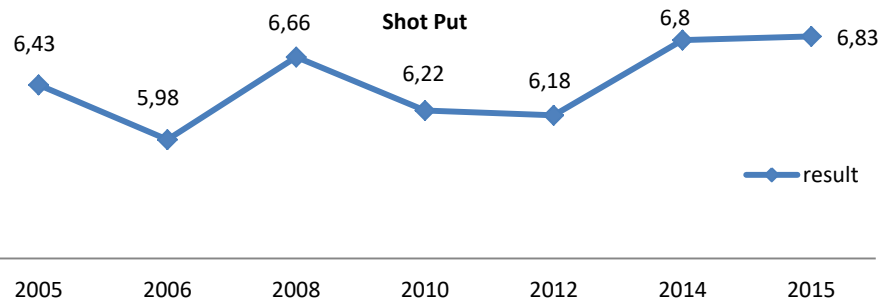
Table 2 Descriptive parameters of the shot put results for the female participants

Variables	N	Rank	Min	Max	M	SEM	SD	VAR	KC test
Shot put 2005	10	4.43	4.18	8.61	6.43	0.39	1.22	1.49	0.61
Shot put 2006	9	2.17	4.87	7.04	5.98	0.24	0.71	0.50	0.56
Shot put 2008	11	4.16	4.20	8.36	6.66	0.41	1.36	1.85	0.69
Shot put 2010	11	3.18	4.40	7.58	6.22	0.28	0.94	0.89	0.49
Shot put 2012	10	1.84	5.15	6.99	6.18	0.18	0.56	0.31	0.47
Shot put 2014	10	1.99	5.83	7.82	6.80	0.20	0.63	0.40	0.46
Shot put 2015	11	1.99	5.67	7.66	6.83	0.21	0.69	0.47	0.53

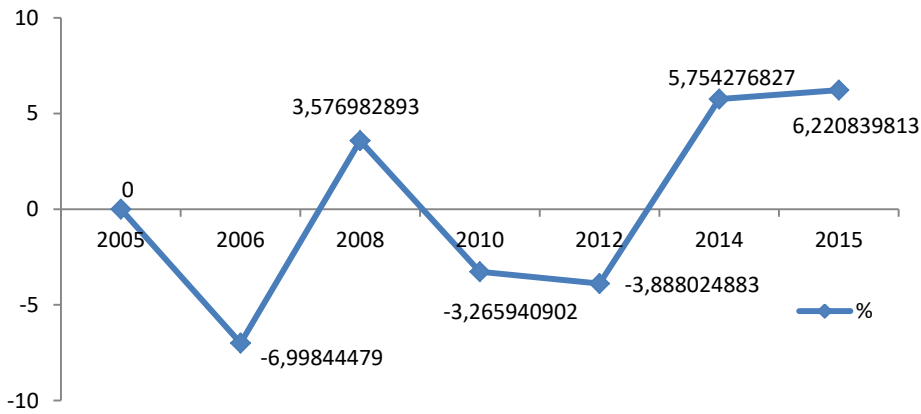
Table 2 shows the results the female schoolchildren with hearing impairment achieved from 2005 to 2015, where the highest result for the shot put was achieved in 2005 with a distance of 8.61m and the lowest score was achieved in 2012, with a distance of 6.99m. (Graph 7). However, if we compare the means of the results (Graph 8), we can note that the best results were achieved in 2015 with an average 6.83m and the lowest scores were noted in 2006 with a distance of 5.98m.



Graph 7 The relationship between the highest and lowest results achieved in the shot put per year, in the population of female school children

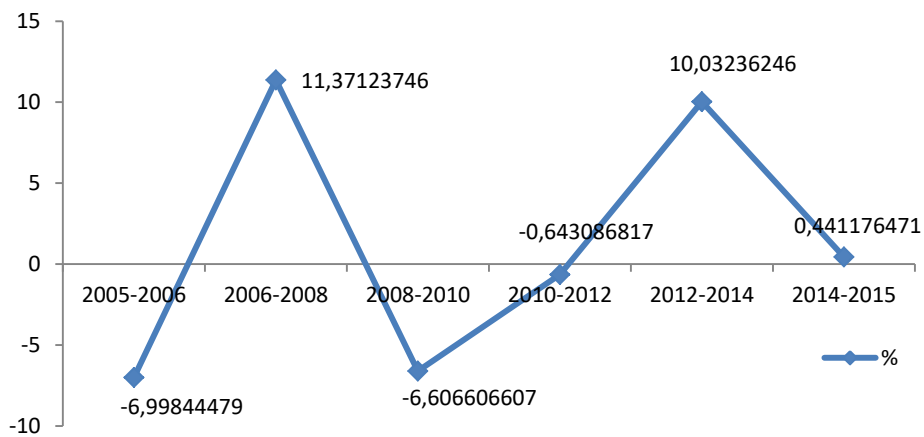


Graph 8 Overview of the average values of the results achieved in the shot put in the women's competition



Graph 9 Overview of the oscillations in the results achieved for the shot put in comparison to the first year in the women’s competition

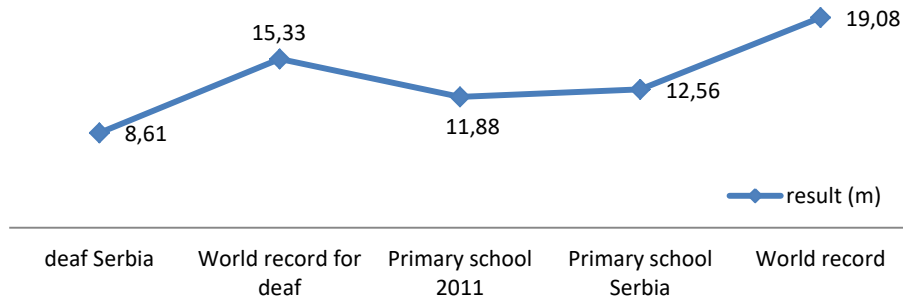
A further analysis of the results (graph 9) achieved by the population of girls and based on the assumption that we are comparing results achieved in 2005 and those achieved in the following years, we can note that during the following few years, the average value of the achieved results was 7.00% lower, that in 2008 it was higher by 3.58%, that in 2010 it was lower by 3.27%, and that it was also lower in 2012 (3.89%) while the greatest increase in the results was recorded in 2014 (5.75%) and 2015 – of 6.22%.



Graph 10 Overview of the oscillations in the results achieved for the shot put in comparison to the previous year, in the women’s competition

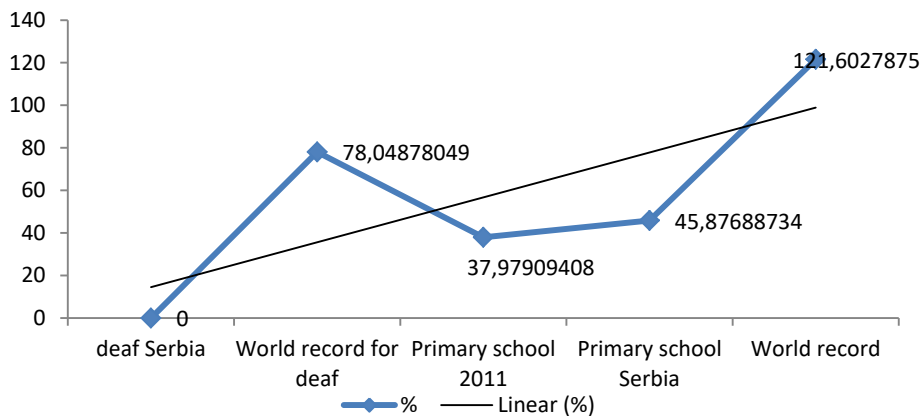
However, in order to gain more insight into the movement of the results during the period of ten years in the women’s competition, the differences in the mean values of the results were analyzed and compared to the previous year (graph 10). The greatest difference between the mean values of the results achieved for the given year in comparison to the previous one was noted in 2006, when the mean value of the results achieved during that year was lower compared to the previous one by 7.00%, while the greatest increase in the mean values was

recorded in 2008 in comparison to 2006 (11.37%) and 2014 in comparison to 2012, when the results were higher by 10.03%.



Graph 11 Records in the population of female

Graph 11 shows a comparison of the best scores in several categories for female schoolchildren who competed in the shot put. As expected, the lowest scores were achieved for female schoolchildren with hearing impairment in Serbia, since in comparison to the number of children attending elementary schools in Serbia, this population is very small. But if we compare it to the national school competition held in 2011, then that difference decreases. At the same time, the world record for female pioneers with hearing impairment represents a drastic difference in comparison to the female pioneers with hearing impairment in Serbia. The greatest difference was noted between the world record for the pioneer age group (19.08m) and the results for the female pioneers with hearing impairment who achieved a result of 8.61m. Thus, Graph 4 shows the results for several different pioneer-age groups, from which we can conclude that the achieved result is equal to the results of other groups with hearing loss, while the differences in the results occur in comparison to the population with normal hearing, and for the World Record that difference is pronouncedly in favor of the individuals who set the world record (a difference exceeding 11m).



Graph 12 The differences in the best results achieved by the population of hearing impaired girls of Serbia and the results achieved in various categories

Analyzing the best result in Serbia achieved by the population of hearing impaired girls in comparison to the best results achieved in various categories (graph 12), we can note that the record in Serbia is 78.05% lower than the world record for hearing impaired girls, and that it was 45.88% lower than the record of Serbia for girls without hearing impairment, while the difference in relation to the world record for girls without hearing impairment is significant (121.60%).

DISCUSSION

The loss of hearing represents a complex problem and many researchers indicate this in their studies (Morsh, 1936; Myklebust, 1964; Schein & Delk, 1974; Schildroth & Karchmer, 1986; Stewart, 2006). Hearing impaired individuals have always found ways to find each other and be active in their community through the use of visual communication and sign language. The deaf do not consider their difficulties a handicap, and instead consider them a special form of cultural identity, based on a special language – “the language of silence“. “The language of silence” makes their world special since it enables a special form of communication which to most other people is quite unknown. Accordingly, the experience of one's own special nature and special identity and ability has transferred onto sports (Ilić, 2008). Taking part in sports activities leads to a sense of pride for being deaf, and the hearing impaired often seem themselves only as a linguistic minority which is fully capable of living a full life, that is, can take part in sport and sports activities just like any other person in the world (Arsić, Slavnić, & Kovačević, 2010; Arsić, & Zrnzević, 2010; Arsić, Stanković, & Zrnzević, 2015). More recent studies (Dair, Ellis, & Lieberman, 2006) also indicate the need for more effective physical education as a part of the program for solving the problem of excess weight gain among hearing impaired children. Sport represents one of the most powerful connecting forces in the world of hearing impaired individuals. Unlike most other types of sport, athletics is a very flexible sport, so that children who begin to run later in life are not missing out on any of the key skills which are built over time, since most athletic disciplines come naturally for children (such as running, jumping, throwing...). That is a way how sport very quickly became a powerful means of acculturation for a hearing impaired child, and helped the exchange of experience between children, becoming the reason for the development of a sense of pride among children. Based on a number of studies in the area of sports genetics, one can conclude that motor abilities are still in the phase of empirical investigations and that it is hard to reach safe conclusions (Wolansky, 1986; Malacko, 2000).

Our results indicate that the best result among the boys reached at the Republican school competition in 2014, when it achieved a result of 11.86m, while the result achieved 2010 is worst with 10.17 m. It is interesting to point out that the weakest result was achieved in 2014 with the same dumped 4.08 m. The smallest difference between the maximum and minimum shot put was in 2005 with a difference of 2.73m, and the biggest difference was in 2014 with 4.78 m. In girls achieved results indicate that the best result was achieved in the school competition in 2005, when it achieved a score of 8.61 m, while the worst result achieved in 2012 with 6.99 m. It is interesting to point out that the weakest result was achieved in 2005 with the same dumped 4.18 m. The smallest difference between the maximum and minimum shot put was in 2012 with a difference of 1.84m, and the biggest difference was in 2005 with 4.43 m. We note that in 2012, 2014

and 2015, this difference was between 1.84m and 1.99m, which indicates the uniformity of the difference between the maximum and minimum results achieved at sports games for children with hearing impairments.

In addition, it is interesting to make a note of the oscillations in the results during all these years, where among both the male and female population we could note the greatest improvement in the results in comparison to the results achieved during the first years was recorded in 2015 (in the case of the boys 11.55% and in the case of the girls 6.22%).

Researchers have found that deaf individuals are inferior to hearing subjects in motor development (Butterfield, 1986; Vance, 1968; Wiegersma & Van Der Velde, 1983), static and dynamic balance (Boyd, 1967; Brunt & Broadhead, 1982; Lindsay & O'Neal, 1976; Long, 1932), and post rotary nystagmus (Myklebust, 1946; Potter & Silverman, 1984). Many researchers have noted the inferiority of the deaf to hearing children on dynamic balancing acts (Long, 1932; Worchel & Dallenbach, 1950; Lindsey & O'Neal, 1976; Brunt & Broadhead, 1982). The results of experiment that Gayle & Pohlman conducted in 1990, indicate that the over-all balance in deaf children is significantly inferior to the balance in hearing children. However, as stated by Wiegersma & Van Der Velde (1983), deficiencies in balance may be due to neurological defects or problems in motor control. We could take into consideration that the differences in the results achieved between the boys with hearing impairment and boys without hearing impairment, could be the consequence of balance or some problems in their motor skills, that is, movement production (the record of the hearing impaired boys was lower by 64.08% and in the case of the girls it was lower by 45.88%).

Hartman, Houwen, & Visscher (2011), also, found that deaf children had significantly more borderline and definite motor problems than the normative sample: 62% (manual dexterity), 52% (ball skills), and 45% (balance skills).

In similar research, Arsić & Stanković (2013) notice greater physical abilities among the boys when compared to the girls, and better results scored by the pioneers in the sprint (for almost all the distances) when compared to the jumping or throwing. It is also clear that the participation of hearing impaired children in the jumping disciplines and throwing disciplines is greater than in the running disciplines among the participants of the pioneer age category.

The results achieved at competitions organized for hearing impaired schoolchildren attending a "special" school for the deaf, show a variability which appears every year. Primarily, the results are not homogenous, and indicate not only the level of physical fitness of hearing impaired children, but can also indicate their height and weight, which play an important part in the manifestation of physical abilities and in achieving results.

Deviations in the results among children with hearing impairment of both genders attending elementary schools in Serbia in comparison to the world results can be explained by a still insufficient participation not only in the shot put but also in the sports activities of this population. The assumption is that professional coaches do not work with these children during the preliminary period, and thus that the preliminary period for competition takes place during physical education classes, which are too infrequent in order for the realized training process to lead to a notable success. It is necessary to point out that according to the cited data, interest in the shot put among children with hearing impairment does exist, and that it would be better to consider their inclusion in competitions with children without any hearing loss, for the purpose of improved socialization and the participation of experts of all profiles so that the health and quality of life of these children would be

improved. If all of the achieved results were analyzed, we could note a higher ability on the part of the boys in comparison to the girls. If we were to also analyze the spatial conditions that the schools for the deaf have at their disposal, then we might conclude that good results have been achieved. Namely, in almost all schools there are not enough spatial conditions which would enable the children to practice throwing disciplines. The lack of any gym facilities leads to almost no physical exercise for hearing impaired children during the winter, which leads to a lack of preparedness for the competition. Instead, the practice takes place in the spring and the competition itself takes place in the month of May, which does not leave enough time to prepare.

A connection has been established between sport and prevention in the field of the physical and mental health of children and the young, for whom sport represents the most popular and most widespread activity (Stanković, 2001). In the case of children with hearing impairment, sports activities are viewed from several aspects. In the case of deaf individuals, it can be viewed as a means of communication and interaction, as a means of their rehabilitation, that is, a means of their socialization and social identification with the hearing population. In addition to the development of a different kind of communication among the hearing impaired, their motor skills also develop in a different manner in comparison to the hearing population. In the end, we can conclude with a final thought from Stewart who claims that sport for the hearing impaired represents a social institution where the hearing impaired can realize their right for self-realization through organizing competitions, participating in them, and the socialization of other hearing impaired individuals who also take part in the sports activities (Stewart, 1991).

CONCLUSION

Children taking part in sports activities feel better, more fit, and have a decreased likelihood of becoming obese later on in life. In a psychological sense, sports stimulation helps intellectual development, sharpens motor skills, develops better emotional and social development of the child, helps prevent the onset of depression and increases self-confidence. An otherwise physically inactive child taking part in sports competitions and activities improves its self-respect and develops better communication skills. This is especially important for hearing impaired children whose communication is limited due to underdeveloped speech.

In Serbia, many free-time activities are organized to include the hearing impaired in the social environment. There are recorded cases of hearing impaired individuals who were athletes whose hearing loss did not represent a barrier for his desire to participate in sport. Competitions for children with hearing impairment in Serbia are organized within school courts, with the minimal use of courts and gyms of the local community, which opens new possibilities for their taking part in other sports and athletic disciplines, and not only the shot put. The free use of existing facilities solves the problem of financial spending and availability of the facilities to individuals with a disability, which enables the redistribution of money to other sources, such as acquiring sports props, traveling to competitions and the like. This can in part be the cause of the results achieved by the sample of schoolchildren, which by means a positive reverse mechanism can contribute to the better socialization and improved quality of life for disabled individuals, but can also enable professionals and academics access to additional data which could help them in their work with the population of children and athletes with hearing impairment.

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KOMPARATIVNA ANALIZA REZULTATA POSTIGNUTIH U BACANJU KUGLE DECE I SPORTISTA OŠTEĆENOG SLUHA

Jedan od sportova koji je dostupan deci oštećenog sluha je bacanje kugle, atletska disciplina koja doprinosi razvijanju snage, brzine, specifične izdržljivosti i okretnosti. Ovo istraživanje je sprovedeno sa ciljem poređenja rezultata postignutih u bacanju kugle na Republičkim igrama osnovnih škola za učenike oštećenog sluha, u periodu 2005-2015. godine, da bi se utvrdilo kretanje rezultata i popularizacija sporta kod ove populacije. Ispitanici oba pola sa utvrđenim oštećenjem sluha od 60dB, uzrasta do 15 godina, pohađali su škole za učenike sa oštećenjem sluha u Republici Srbiji. Odstupanja u rezultatima između dece sa oštećenim sluhom oba pola osnovnih škola Srbije u odnosu na svetske rezultate, moguće je objasniti još uvek nedovoljnom ekspanzijom bavljenja kako bacanja kugle, tako i bavljenjem sportom ove populacije. Potrebno je naglasiti da prema navedenim podacima interes za bacanje kugle dece sa oštećenim sluhom postoji i da bi bilo poželjno razmotriti njihovo uključivanje u takmičenja sa decom bez smetnji, radi bolje socijalizacije i uključivanja eksperata svih profila, kako bi se deci poboljšalo zdravlje i kvalitet života.

Ključne reči: atletika, gluvi, inkluzija, školski sport