

Analysis of The Need for Start Assistants for Deaf Swimmers

Ika Novitaria Marani^{1*}, Ari Subarkah², Setyo Purwanto³, Adi Wijayanto⁴

^{1,2,3}Fakultas Ilmu Keolahragaan / Universitas Negeri Jakarta / Jakarta / Indonesia

¹Jl. Pemuda No 10 Rawamangun Jakarta Timur

⁴Fakultas Ilmu Pendidikan / Universitas IAIN Tulugagung / Tulugagung / Indonesia

⁴Jl. Mayor Sujadi No. 46 Kudus, Tulungagung

¹ikanovi1979@gmail.com, ²arytarakan2008@gmail.com, ³tyoprwnt@gmail.com,

⁴wijayanto@yahoo.com

Received: June 25, 2023; **Reviewed:** June 27, 2023; **Accepted:** June 28, 2023;

Published: June 30, 2023

ABSTRACT

Persons with disabilities were people who had long-term physical, mental, intellectual or sensory limitations. People with disabilities were divided into several types, namely physical disabilities, sensory disabilities, mental disabilities, and intellectual disabilities. Deaf people are included in sensory disabilities who have limited senses. So people with disabilities need special assistance, especially in starting swimming. The purpose of this study was to determine whether deaf swimmers need a swimming start aid. The research method used was a descriptive method with a survey technique. The time of study was carried out in 2022 starting from April to July. The location for data collection was carried out at the Senen Jakarta swimming pool. The population and samples used were athletes with hearing impairment in DKI Jakarta, totalling 20 people using total sampling. The research instrument used was a questionnaire to analyze the need for start aids for deaf swimmers by having three indicators as a decision maker on whether or not to use start aids for deaf swimmers. The data analysis technique used was the descriptive analysis technique. The results showed that deaf swimmers needed a start aid. Further research is expected to be able to make starting aids that can be used by deaf swimmers to achieve optimal performance.

Keywords: Deaf; Swimming; Start.

INTRODUCTION

Every individual was created with a variety of advantages and disadvantages that differ from one individual to another, including those with special needs where they have advantages behind their shortcomings. Law of the Republic of Indonesia Number 19 of 2011 concerned Ratification *Convention on the Rights of Persons with Disabilities* no longer use the term people with disabilities, replaced with people with special needs (Syafi'ie, 2014). Persons with disabilities were people who have long-term physical, mental, intellectual or sensory limitations, which when faced with various barriers, can make it difficult for them to participate fully and effectively

in society based on equal rights. (Widinarsih, 2019). Thus, disability was not only a health problem. It was a complex phenomenon, reflecting the interaction between the features of a person's body and the features of the society in which he lives.

Persons with disabilities were divided into several types, namely physical disabilities, sensory disabilities, mental disabilities, and intellectual disabilities (Rumah Sakit EMC, 2019). Deaf people were included in sensory disabilities who have limited senses. Deafness was someone who experiences obstacles or disturbances in the sense of hearing (Ragil Tri Wibowo, 2018). To be able to change people's perceptions about people with disabilities, help reduce the isolation of people with disabilities and integrate them into people's lives can be done through sports (Abu Altaieb et al., 2017). Thus, sports can be a powerful tool to change people's attitudes and empower individuals through the acquisition of new physical and social skills, self-confidence and positive relationships, the power of sport as a means to improve the lives of people with disabilities is reflected in various international agreements, strategies and instruments. (Parnes, P & Hashemi, 2007). Because the purpose of sport was to improve the ability of body functions to support various activities or body activities in improving the quality of human resources. Therefore, coaching and developing sports for people with disabilities was very important to do, supported because it can foster self-confidence, independence and self-esteem for people with disabilities. (Habibullo Mustofa, 2020).

One of the sports that can be done by anyone regardless of gender, age, or physical limitations was swimming. Swimming was an activity in the water that requires effort to move the body from one place to another. Swimming was included in one of the aquatic sports that were carried out by moving (floating or lifting) all parts of the body above the water surface and carried out without supporting equipment. (Hartoto, 2018). Swimming has many benefits such as: having good lung capacity, endurance, flexibility, balance, muscle strength and weight control (Garrido Nuno, Daniel A. Marinho, Tiago M. Barbosa, Aldo M. Costa, Antonio, J. Silva, Jose A. Perez-Turpin, Mario, 2013).

To be able to achieve optimal swimming performance, it was necessary to master good technique when starting, swimming techniques, turning and finishing (Kamalia, 2014). One of the techniques that must be mastered was the start because the start was the beginning of a race in various sports including swimming. The role and purpose of starting a swimming competition greatly affect the swimming ability of the swimmer. This means that the acquisition of time taken by a swimmer to complete his finish in a certain swimming number in a swimming race was influenced by his role and starting ability. (Maidarman, 2016). This is supported by research conducted by Morais, dkk (2019) which showed that a combination

of starts and reversals accounted for almost a third of the total race time among the 100m finalists at the 2016 European Championship.

Therefore, mastery of swimming start movements was very important for all swimmers, including swimmers with hearing disabilities (deaf). The sign of the start of a swimming competition was the sound of the start signal given by the swimming starter. Where on each swimming pool track, there was a loudspeaker with a function to voice the start sound signalling the start of the race. Thus, every swimmer who competes must be able to listen to the signal or sound given by the starter so that it was not too late to jump into the water and start swimming. However, for deaf swimmers, of course, this becomes a problem, because they have difficulty receiving verbal communication (Dummer & Watkind, 2003).

The mistakes deaf athletes often make during competitions are jumping before the whistle was sounded or jumping too late when the whistle was sounded. (Dwi Nata, Oktri Yeni, Surahman, & Rusdi, 2020). One of the shortcomings of deaf athletes was a lack of balance. This was because deaf athletes have hearing loss which causes vestibular defects that weaken their balance point (Padden, 2013). Loss of ability to maintain balance and retrieve visual information, causes deaf swimming athletes to often experience obstacles in the development of environmental orientation and motor processes. This was because the sense of hearing can be the fastest information pathway for the brain to process. Therefore, if there was interference with the ear, then the person will experience delays every time they make a decision. And this was often associated with his mobility ability which tends to run slowly.

Deaf athletes can perform optimally, but for their achievements to develop quickly, they must be supported by the intelligence aspect that comes from vision and motor skills. (Nofiaturrehman, 2018). Therefore, it was necessary to conduct a study to find out what was needed by deaf swimmers, especially when starting to perform optimally. Based on the background of the problem, the researcher was interested in researching the analysis of the need for starting aids for deaf swimmers.

METHOD

The purpose of this study was to determine whether deaf swimmers need a start aid when starting swimming. The research method used is a descriptive method with a survey technique. The time of research was carried out in 2022 starting from April - July. The location of data collection was carried out at the Senen Jakarta swimming pool. The population and samples used were athletes with hearing impairment in DKI Jakarta,

totalling 20 people using total sampling. The research instrument used was a questionnaire to analyze the need for starting aids for deaf swimmers.

The data analysis technique used is the descriptive analysis technique. The descriptive analysis technique describes the description of variable data consisting of frequency distribution, median, mode, mean, standard deviation, variance, and highest and lowest value. After describing the description of the research results, the next step is to provide a discussion related to the research results obtained so that they can be used for the next research step, namely making a starting device that is intended to help deaf swimmers when starting swimming so that they can achieve optimal performance.

RESULTS AND DISCUSSION

The implementation of the research begins with designing research instruments used to collect information from respondents who will become sources of information. The research instrument has gone through the validation stage with suggestions and comments from expert validators which are used as material in revising the instrument. Furthermore, data collection was carried out using a closed questionnaire by asking questions from three indicators, namely: 1). Availability, 2) Suitability and 3) Convenience. The results of distributing the needs analysis questionnaire can be seen based on the following criteria:

Table 1.
Availability of tools

Norm	Frequency	Cumulative Frequency
Very Available	15	75
Available	3	15
Enough	2	10
No Available	0	0
Total	20	100

The results of Table 1 above can be seen that the current swimming start tool was not available according to the needs of deaf swimmers. It can be seen that a swimming start aid was very much needed by 75%, 15% was needed and 10% was enough.

Table 2.
Suitability Tools

Norm	Frequency	Cumulative Frequency
Very Suitable	0	0
Suitable	0	0
Enough	3	15
Not Suitable	17	85
Total	20	100

The results of Table 2 above can be seen that the current swimming start tool was not appropriate according to the needs of deaf swimmers which can be seen from the results of respondents who answered that they did not appropriate as much as 85% and enough as much as 15%.

Table 3.
Convenience Tool

Norm	Frequency	Cumulative Frequency
Very Convenience	0	0
Convenience	3	15
Enough	5	25
Not Convenience	12	60
Total	20	100

The results of Table 3 above can be seen that the current swimming start tool was not convenient for deaf swimmers to adapt to, which can be seen from the results of respondents who answered not easy as much as 60%, enough 25% answered and 15% easily answered. Of course, based on the results of these three criteria, are used as the basis for making decisions on whether swimming start aids are needed by deaf swimmers or not.

Based on the results of the study, it can be seen that deaf swimmers need assistive devices when starting. Because deaf swimmers have hearing problems, it was difficult for them to start using the whistle sounded by the starter. In sports competitions 'On your mark', 'Set' and 'Go' represent different mental and physical stages of being alert and ready. And currently, the timing system used, especially in swimming, uses auditory signals or the sound of a whistle.

The timing or start system signals the start of the race, sometimes equipped with a flashing LED for the 'Go' signal. However, deaf athletes need additional visual indicators to provide complete mental and physical readiness provided by 'On your mark', 'Set' and 'Go' (Elvitigala, Wessolek, Achenbach, Singhabahu, & Nanayakkara, 2016). The visual cues provided by existing systems are often insufficient, as they do not provide the mental and physical cues athletes need to ensure they are alert and prepared. Thus, in competitions such as swimming, it was difficult for deaf athletes to participate. Such a system not only affects the performance of swimmers but also violates the right to participate in recreational activities without restrictions.

Several studies support the importance of assistive devices to help deaf swimmers to be able to start correctly according to the signal given. For example, research Stick Ear oleh Yeo et al. (2013) features a collection of sound-based sensor nodes by enabling a

distributed network. These sensor nodes convert door knocks into visual signals that can be easily identified by hearing-impaired people. So is Ho-Ching, dkk (2003) developed two visual displays to provide awareness of environmental sounds such as telephone rings and knocks for the deaf in the work environment.

Matthews et al (2005) have researched peripheral visual displays to help deaf people maintain awareness of sounds in their environment. Whereas Ketabdar et al (2009) develop mobile applications to analyze audio context and issue visual and tactile alerts. This app was designed for the deaf to get notified about audio events happening around them. Matsuda et.al (2014) conducted research on the development of luminous devices for the deaf that converts non-speech audio information into visual information as well as provide direction to sound sources using light. Therefore, it was hoped that further research can be done to make a tool for deaf swimmers when starting swimming to make it easier for deaf swimmers to start. So that they will not make mistakes such as being too early or too late when the start signal was sounded.

CONCLUSIONS AND SUGGESTIONS

The results showed that deaf swimmers needed a starting device when starting swimming because they had hearing impairments. Considering the current start method is to use a human voice or the sound of gunfire. Based on the conclusions of the research, it can be said that a tool is needed for deaf swimmers when starting swimming. Therefore, further research is expected to be able to make a tool for deaf swimmers when starting swimming so that it can help deaf swimmers to achieve optimal performance by getting the best time.

REFERENCES

- Abu Altaieb, M. H., Mousa Ay, K., Al Dababseh, M. F., Bataineh, M. F., Al-Nawaiseh, A. M., & Taifour, A. (2017). The impact of an educational course for swimming on freestyle swimming performance and life skills for deaf students. *Journal of Human Sport and Exercise*, 12(4), 1265–1277.
- Dummer, G. M., & Watkins, D. H. (2003). Moving to the Next Level: Swimming Instruction for Persons with Disabilities. *Test. Usaswimming.Org*, 1–8.
- Dwi Nata, A., Oktri Yeni, H., Surahman, F., & Rusdi. (2020). The Influence of Exercise Model Using Video Media on Swimming Grabstart Skills for Deaf Children. *Jipes - Journal of Indonesian Physical Education and Sport*, 5(1), 18–25.
- Elvitigala, D. S., Wessolek, D., Achenbach, A. V., Singhabahu, C., & Nanayakkara, S.

- (2016). SwimSight: Supporting deaf users to participate in swimming games. *Proceedings of the 28th Australian Computer-Human Interaction Conference, OzCHI 2016*, 567–570.
- Garrido Nuno, Daniel A. Marinho, Tiago M. Barbosa, Aldo M. Costa, Antonio, J. Silva, Jose A. Perez-Turpin, Mario, C. M. (2013). Relationships Between Dry Land Strength, Power Variables and Short Sprint Performance in Young Competitive Swimmers. *Journal of Human Sport and Exercise*, 5(2), 240–249.
- Hartoto, D. M. R. dan S. (2018). Pengaruh Alat Bantu Swim Board Terhadap Hasil Belajar Renang Gaya Dada (Studi pada Siswa Kelas X SMAN 4 Sidoarjo). *Jurnal Pendidikan Olahraga Dan Kesehatan*, 6(2), 221–224.
- Ho-Ching, F. W. L., Mankoff, J., & Landay, J. A. (2003). Can you see what I hear? The design and evaluation of a peripheral sound display for the deaf. *Conference on Human Factors in Computing Systems - Proceedings*, (5), 161–168.
- Kamalia, A. (2014). Pengaruh Modifikasi Pelatihan Teknik Renang Gaya Dada Pada Anggota Renang Lumba-Lumba Swimming Club Surabaya. *Jurnal Kesehatan Olahraga*, 2 (2), 106–113.
- Ketabdar, H., & Polzehl, T. (2009). Tactile and visual alerts for deaf people by mobile phones. *ASSETS'09 - Proceedings of the 11th International ACM SIGACCESS Conference on Computers and Accessibility*, 253–254.
- Maidarman. (2016). Kontribusi kekuatan otot tungkai, kelentukan pinggang, dan keseimbangan terhadap kemampuan start renang gaya kupu-Kupu pada mahasiswa. *Jurnal Performa Olahraga*, 1 (2), 147–156.
- Matsuda, A., Nakamura, H., & Sugaya, M. (2014). Luminous device for the deaf and hard of hearing people. *HAI 2014 - Proceedings of the 2nd International Conference on Human-Agent Interaction*, 201–204.
- Matthews, T., Fong, J., & Mankoff, J. (2005). Visualizing non-speech sounds for the deaf. *ASSETS 2005 - The Seventh International ACM SIGACCESS Conference on Computers and Accessibility*, 52–59.
- Morais, J. E., Marinho, D. A., Arellano, R., & Barbosa, T. M. (2019). Start and turn performances of elite sprinters at the 2016 European Championships in swimming. *Sports Biomechanics*, 18(1), 100–114.
- Nofiaturrehman, F. (2018). Problematika Anak Tunarungu Dan Cara Mengatasinya. *Quality*, 6(1), 1.
- Parnes, P & Hashemi, G. (2007). Sport as a Means to Foster Inclusion, Health and Well-Being of People with Disabilities, in Literature Reviews on Sport for Development and Peace at 21.
- Ragil Tri Wibowo, S. (2018). Pembinaan Olahraga Renang bagi Siswa Berprestasi dalam cabang Olahraga Renang di SLB, 4(November), 104–108.
- Rumah Sakit EMC. (2019). Disabilitas Tidak Hanya Soal Fisik, Kenali Ragam Disabilitas Lain dan Penanganannya.
- Yeo, K. P., Nanayakkara, S., & Ransiri, S. (2013). Stick Ear: Making Everyday Objects Respond to Sound, 221–226.