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USING SWIMMING FOR VISUALLY IMPAIRED PEOPLE

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Abstract

This paper shows the limitations faced by visually impaired people in the practice of physical activity. The inclusion of visually impaired people in sports continues to be an obstacle, mainly due to the lack of opportunities provided by the competent sports institutions to this vulnerable group. The purpose of this research is to teach swimming to visually impaired people between 7 and 18 years of age with limited economic resources who have never had the opportunity to interact in an aquatic environment. With a sample of 33 visually impaired children who are part of the Asociación de Ciegos Manabí (Manabí Association of the Visually Impaired), complying with the statistical assumption of normality in non-parametric tests, a thrustone-type estimation scale was elaborated to estimate the level of knowledge that the participants might have regarding the fundamentals required in the sport of adapted swimming. The aforementioned estimation scale obtained an agreement among judges required to obtain a definitive scale, while for the reliability criterion the test-retest reliability principle was applied. Knowing the level of knowledge of the participants regarding swimming, methodological strategies for its teaching were

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designed according to their individual learning needs, and in the final stage, the estimation scale was applied again to check the degree of learning of the sample selected to carry out this research.

Keywords: Application; swimming; visual disability.

Resumen

El presente trabajo muestra las limitaciones a las que se enfrentan las personas con discapacidad visual en la práctica de actividad física. La inclusión de las personas con discapacidad visual al ámbito deportivo continúa siendo un obstáculo, principalmente por la falta de oportunidades que brindan las instituciones deportivas competentes a este grupo vulnerable. Esta investigación tiene como finalidad enseñar natación a personas con discapacidad visual que poseen entre 7 y 18 años de escasos recursos económicos que nunca han tenido la oportunidad de interactuar en un medio acuático. Con una muestra de 33 niños(as) con discapacidad visual que forman parte de la Asociación de Ciegos Manabí cumpliendo el supuesto estadístico de normalidad en pruebas no paramétricas, se elaboró una escala de estimación tipo thrustone que permitió estimar el nivel de conocimiento que pudieran tener los participantes respecto a los fundamentos requeridos en el deporte de la natación adaptada. La mencionada escala de estimación obtuvo un acuerdo entre jueces requeridos para obtener una escala definitiva, mientras que para el criterio de fiabilidad se aplicó el principio de fiabilidad test- retest. Conociendo el nivel de conocimiento de los participantes respecto a la natación se procedió a diseñar estrategias metodológicas para su enseñanza de acuerdo con sus necesidades de aprendizaje individuales, para en la etapa final de la misma aplicar nuevamente la escala de estimación para comprobar el grado de aprendizaje de la muestra seleccionada para llevar a cabo esta investigación.

Palabras clave: Aplicación; discapacidad visual; natación.

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1. Introduction

In the canton of Portoviejo, province of Manabí, 74 people between 7 and 18 years old are visually impaired. National Council of Disabilities, CONADIS (2020) [1]. This disability, by becoming a sensory limitation, Núñez and Salamanca, (2001) point out that the visually impaired person has a limitation in the experiences with the environment, affecting their coexistence and interaction with society [2]. Given these limitations, physical activity is a tool for social integration. However, in Ecuador and in the province of Manabí, there are barriers that prevent people with disabilities from accessing recreational physical activity or sports. Among these, structural barriers stand out, which refer to the fact that many of the urban structures are not adapted to the access, use and handling of people with disabilities. The geographical barrier is that

most of the visually impaired people in the province of Manabí live in rural areas of the canton, making their mobility difficult. The economic barrier is added to this barrier, since the representatives of people with disabilities tend to prioritize other needs such as health, food, education, leaving segregated the practice of physical activity, ignoring that as mentioned by the previous authors, physical activity can become a tool for the integration and independence of people with disabilities.

Finally, the pedagogical barrier is present, since the lack of preparation on the part of the coaches in charge of teaching an adapted sport in the competent sports institutions fails to meet the teaching objectives set. The aforementioned is related to the lack of implementation of adapted activities that allow for better learning by the participants. All these barriers present in the canton Portoviejo influenced the low participation of athletes with disabilities representing the province in sporting events during the years 2019-2020, Federación Deportiva de Manabí, (2019) [3]. Therefore, it became necessary to develop methodological strategies that allow the teaching of swimming to people with visual impairment, through adapted activities that condition a better learning. The proposal mentioned in this research is an initiative in the promotion of physical activity for people with visual impairment, in fact, there are several organizations and legal statutes in the country that guarantee the participation of citizens. Among those that stand out are the Organic Law on Disabilities (LOD, 2012) [4], and the Law on Sports, Physical Education and Recreation [5].

As a background, physical activity and disability are not recent topics, highlighting mainly three historical, educational and psychological moments, as mentioned by Hernández [6], who points out that during the 20th century, adapted sports were born as a result of physical therapy or rehabilitation sessions for soldiers wounded in wars in order to overcome traumas acquired during the war. The educational field was not left behind, as it also underwent a series of changes in favor of the inclusion of people with disabilities in educational classrooms. These changes were reflected in 1994 when the World Conference on Special Needs Education: Access and Quality was held. It was determined that quality education should be open to all students, whether or not they have learning difficulties, respecting cultural, ethnic, social and any other type of diversity [7].

From the psychological perspective. Torralba *et al.* [8] conducted an interesting research to determine the inference between motivation to engage in physical activity and athletes with disabilities. The results determined that motivation has no relevance to gender, economic status or disability. What is really relevant in this case is the methodology with which the athletes execute the activities proposed by the trainer. In this way, it is possible to maintain permanently the motivation of the athletes.

2. Methods

This qualitative research has methodological approaches that classify it within the Action Research category Gil (2016) [9]. Regarding the sample, there are two different groups of participants with the same characteristics, i.e., both groups are between 7 and 18 years old, both groups are visually impaired and have

not had previous experience in the practice of physical activity. This was done in order to avoid the existence of external factors that could affect the reliability of the estimation scale designed. Such as lack of disability, previous experience in the practice of swimming, among others. The initial design of the swimming knowledge estimation scale will be applied to the first sample group that is part of the Oswaldo Loor Moreira Foundation, N=20, in order to determine the power of each item with respect to the construct to be measured (swimming knowledge). In order to subsequently determine those items that statistically achieve that the estimation scale is reliable. The second group, which is part of the Manabí Association of Visually Impaired, N=33. It will be subjected to the estimation scale resulting from the evaluation between judges, calculation of covariation between items, among others. The sum of the groups forms the total sample of the research, which meets the statistical assumption of normality in non-parametric tests. The characteristics of the groups in relation to the type of visual disability (Escudero, 2011) [10] are shown in Table 1:

Table 1. *Characteristics of the participants, Group 1*

Students	Age	Disability
Student 1	17	Visually impaired
Student 2	11	Low vision/peripheral vision
Student 3	11	Low vision/peripheral vision
Student 4	11	Low vision/peripheral vision
Student 5	9	Visually impaired
Student 6	11	Low vision/blurred vision
Student 7	18	Visually impaired
Student 8	8	Low vision/blurred vision
Student 9	10	Low vision/blurred vision
Student 10	13	Low vision/blurred vision
Student 11	16	Low vision/blurred vision
Student 12	10	Low vision/peripheral vision
Student 13	10	Visually impaired
Student 14	11	Visually impaired

Student 15	9	Visually impaired
Student 16	9	Visually impaired
Student 17	9	Low vision/peripheral vision
Student 18	10	Low vision/peripheral vision
Student 19	14	Low vision/peripheral vision
Student 20	12	Low vision/peripheral vision

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Table 2. *Characteristics of the participants, Group 2*

Students	**Age**	**Disability**
Student 1	8	Visually impaired
Student 2	11	Low vision/peripheral vision
Student 3	12	Low vision/peripheral vision
Student 4	9	Low vision/peripheral vision
Student 5	11	Visually impaired
Student 6	11	Low vision/blurred vision
Student 7	10	Visually impaired
Student 8	18	Low vision/blurred vision
Student 9	10	Low vision/blurred vision
Student 10	15	Low vision/blurred vision
Student 11	16	Low vision/blurred vision
Student 12	10	Low vision/peripheral vision
Student 13	10	Visually impaired

Student 14	9	Visually impaired
Student 15	9	Low vision/peripheral vision
Student 16	9	Visually impaired
Student 17	11	Low vision/blurred vision
Student 18	19	Visually impaired
Student 19	8	Low vision/blurred vision
Student 20	10	Low vision/blurred vision
Student 21	13	Low vision/blurred vision
Student 22	14	Low vision/blurred vision
Student 23	16	Low vision/peripheral vision
Student 24	15	Visually impaired
Student 25	12	Visually impaired
Student 26	12	Low vision/peripheral vision
Student 27	9	Visually impaired
Student 28	11	Low vision/blurred vision
Student 29	10	Visually impaired
Student 30	8	Low vision/blurred vision
Student 31	9	Low vision/blurred vision
Student 32	7	Low vision/blurred vision
Student 33	7	Low vision/blurred vision

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3. Development

First, a thrustone-type observational scale was elaborated, whose items allowed estimating the level of knowledge that the participants might have regarding the fundamentals required in the sport of adapted swimming. This type of observational scale makes it possible to determine the presence or absence of an

attitude. Generally used in the educational field, it can also be applied in this sports area since its dichotomous answers (YES/NO) will check if the participant has or does not have certain attitudes that can be observed during the execution of the sport of swimming. The mentioned diagnostic test was elaborated from the theoretical criteria indicated for its conception, that is to say, the initial items were prepared and these items were applied to the first selected sample group (pre-test). Later, these items were submitted to an expert validation (agreement among judges) to obtain a definitive scale, enhancing the reliability of the test, then, for the criterion of validity, confirmatory factor analysis was applied to verify that the elaborated items measure what they are intended to measure. The aforementioned data were obtained using the IMB SPSS 25 program.

Table 3. *Scale of initial estimate*

Value	Action	Yes	No
1	Exhale through the nose		
2	Recognizes the workspace		
3	Fully immersed		
4	Performs ventral or dorsal flotation		
4.5	Slides 5 meters		
5	Slides kicking 10 meters		
5.5	Slides in supine position		
6	Performs a good batting motion		
7	Possesses intensity in leg batting		
8	Moves without the aid of implements		
9	Coordinates batting and breathing		
9.5	Coordinates bat and stroke		
10	Swim 15 meters		

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Table 4. *Scale of estimation resulting from the agreement between judges and RBP*

Value	Action	Yes	No
1.5	Exhale through the nose		
3	Recognizes the workspace		

4.5	Fully immersed
5	Performs ventral or dorsal flotation
6	Possesses intensity in leg batting
7,5	Moves without the aid of implements
9	Coordinates batting and stroking movements
10	Coordinates batting, stroking and breathing motions

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Table 5. *Characteristics of the items.*

Items	**Rbp**	**S_i**	**S_x**	**Covariation**
1	-0,08	0,48	5,81	-0,22
2	0,23	0,49	5,81	0,65
3	0,26	0,49	5,81	0,74
4	0,4	0,42	5,81	0,98
5	0,36	0,5	5,81	1,05
6	0,45	0,41	5,81	1,07
7	0,4	0,48	5,81	1,12
8	0,43	0,5	5,81	1,5
9	0,60	0,48	5,81	1,25
10	0,56	0,5	5,81	1,25

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Once the reliability and validity criteria were defined, the test was applied to the second group of participants to determine the level of knowledge that the participants have in relation to adapted swimming. Based on the results of the test, the teaching of adapted swimming was carried out taking as a reference Domínguez (2001), with his publication La enseñanza de la natación a través del juego (Teaching swimming through games) [11], which establishes the guidelines, considerations and sports objectives to be followed in the teaching process of swimming. In addition, the recommendations of Bustos (2003) [12] and Ortiz (2010) [13], who establish guidelines regarding the good management of a class for visually impaired

people, such as the use of auditory and sensory (touch) communication channels, having a vocabulary with terms that are understood by the participants, among others. Some aspects of the methodology applied are detailed below.

The first criterion to be taken into account when teaching adapted swimming to people with disabilities is that the fundamentals of swimming as a sport are the same. The adaptation of the activities makes the difference according to the possibilities of each athlete, which is why Domínguez [11] proposes teaching swimming through games. This methodology is applied not only to people with disabilities, but also to children under five years of age who present resistance when interacting in an aquatic environment. One of the most used activities is the submersion, which is the ability of the participant to submerge completely in the water. It consists of throwing a coin or shiny object so that the participant, through the game, tries to reach the coin before it hits the bottom of the pool. This activity can certainly not be performed by people with visual impairment, however, a circular object that emits sound is used, which will allow the participant to orient himself in the surrounding space and catch the object that was indicated by the trainer. Another activity adapted for the visually impaired in relation to the submersion foundation is to create a round in which at the coach's count both the coach and the participants will submerge at the same time as long as all the members have their arms held each other, in this way, through the game, unconsciously, the participants are developing this first foundation.

In relation to the second foundation of swimming proposed by Domínguez, which corresponds to flotation, the aforementioned author emphasizes that, in order to perform the adapted activities, the participants and the coach must have developed a level of trust and respect that allows them to carry out the following activities, since they require a higher degree of difficulty than the previous foundation, and for this it is necessary the trust that exists between the coach and the participant. One of the activities carried out for this foundation consists of the participant placing his arms horizontally, simulating the design of an airplane or a star. While the trainer with his arms will hold the participant by the torso so that he can be in supine or prone position performing the flotation, it should be noted that the type of supine or prone position will depend on the confidence or the level of permissiveness that the participant has towards the trainer.

The following teaching foundation that corresponds to the movements of leg stroke and breaststroke involves a greater difficulty for the trainer, since he/she must simulate on land the movements that are executed in the water in such a way that the participants lying on the ground can perform the leg stroke or breaststroke movement with an acceptable technical gesture. Remembering that for visually impaired people, graphing the movements mentally is their only learning resource, so the trainer should use all the means and a language appropriate to the cultural and educational context of the participant so that he/she can understand what the trainer intends to teach. The learning of leg strokes and strokes can be supported with swimming implements such as the swim board or the poolboy which is a colloquial name given to a small object that floats and can be manipulated and used by the participants.

This foundation requires a great number of hours spent for its learning and its optimal execution since they constitute the basis of swimming. Therefore, there are numerous activities with different degrees of

difficulty that allow the learning of this. Swimming, like all sports, requires a systematic learning process, so once the basics of leg strokes and breaststroke have been learned, both movements can be combined or can be included in the action of the breathing previously learned in the submersion phase. In this foundation, it is not essential that the activity is performed with an impeccable technical gesture, on the contrary, it is intended that the participant throughout the sessions can improve their technical gesture through practice.

The last foundation, which is nothing more than the coordination of all the elements learned previously, requires a challenge for the participants, since they will have to coordinate the movements of batting, stroke, breathing, technical gestures of the kick and stroke, counting the number of kicks, all of them added to their disability, undoubtedly this last foundation which is called coordination requires a lot of effort, concentration and practice on the part of the participants. The union of all the fundamentals in a single movement can be supported by swimming instruments described above, as well as communication can be established between the trainer and the participant so that the trainer serves as a flotation instrument for the participant. In other words, the participant holds the trainer's arm with his/her hands, simulating a swimming board, so that the participant can execute all the movements with 1° more confidence since he/she feels that he/she has the support of the trainer.

Depending on the group, the trainer may be able to simultaneously start learning another swimming stroke as long as he/she has the consent of the participants. In this case, the sample of participants did not wish to learn a new stroke, which represented a negative aspect for the research. Since the participants were willing to practice the stroke that was being taught until they had an exceptional technical gesture. Finally, the participants did not request to learn how to dive. This action, in the opinion of this working group, was a challenge, since it was clear that the dangers involved in the execution of a dive for a visually impaired person were evident. However, the desire of the participants overcame any fears they might have. While it is true that not everyone wanted to learn to dive. But several participants did show their desire to learn it.

A last activity that does not correspond to a foundation but to a recreational activity that from the sporting point of view is known as active rest. It was to play catch with the participants, but in the water, in this way, the participants had to swim or use all the resources learned to participate in the game and avoid being caught by another of his companions. In this game, without a doubt, everything learned was put into practice, since the participant had to concentrate and recognize the environment and the surrounding space in addition to making stealthy movements to avoid being discovered by the companion.

4. Results

During the development of the research, the presence of the COVID-19 pandemic affected the learning sessions of adapted swimming. However, a percentage of compliance with the different phases taught during this process was estimated. These were supported by the literature of the previously mentioned authors regarding the teaching methodology of this sport. This percentage of compliance also has a direct

relationship with the number of attendances that the athletes had; the number of sessions carried out during this process, whose duration was 5 months before the beginning of the confinement were 60.

Table 5. *Learning in relation to the fundamentals*

Student	Familiarization	Breathing	Displacement	Coordination	Assistance
1	100%	90%	85%	90%	60
2	100%	90%	90%	90%	60
3	100%	90%	90%	90%	60
4	100%	90%	90%	90%	60
5	100%	90%	90%	90%	60
6	100%	90%	90%	90%	60
7	100%	90%	90%	90%	60
8	100%	90%	90%	90%	60
9	100%	90%	80%	80%	58
10	100%	90%	80%	85%	59
11	100%	90%	90%	90%	60
12	100%	80%	80%	70%	55
13	100%	80%	80%	75%	56
14	100%	90%	90%	80%	58
15	100%	90%	90%	85%	59
16	100%	90%	90%	90%	60
17	100%	90%	90%	90%	60
18	100%	90%	90%	90%	60
19	100%	90%	90%	90%	60
20	100%	90%	90%	90%	60
21	100%	90%	90%	90%	60
22	100%	90%	90%	90%	60
23	100%	90%	90%	90%	60
24	100%	90%	90%	90%	60
25	100%	90%	90%	90%	60
26	100%	90%	90%	85%	59
27	100%	90%	90%	85%	59
28	100%	90%	90%	85%	59
29	100%	90%	90%	85%	59
30	100%	90%	90%	85%	59
31	100%	90%	90%	85%	59

32	100%	90%	90%	90%	60
33	100%	90%	80%	90%	60

5. Conclusions

In our country, despite the existence of laws that protect people with disabilities in the practice of sports activities by sports institutions, promotions of these activities are scarce. The reasons for this are perhaps due to the lack of adequate infrastructure or the lack of knowledge of methodological strategies on the part of coaches and those responsible for sports institutions. As a consequence, few people with disabilities are involved in physical activity.

The practice of swimming and physical activity in general, in addition to providing multiple health benefits for those who practice it, can also become a tool for the integration of people with disabilities into society. However, it is often the family members of people with disabilities who limit certain activities that are considered dangerous for them. Among the activities that generally limit physical activities stand out. Bringing as a consequence sedentary people with disabilities, with high rates of obesity and low self-esteem.

6. References

1. Ministerio de salud pública. Estadísticas de discapacidad. 2020. Recuperado de https://www. consejodiscapacidades.gob.ec/estadisticas-dediscapacidad/

2. Núñez M, Salamanca O. La deficiencia visual. En: Memorias del III Congreso *"La atención a la diversidad en el sistema educativo".* 2001; Universidad de Salamanca, Instituto Universitario de Integración en la Comunidad. ONCE. Recuperado de https://campus.usal.es/~inico/ actividades/actasuruguay2001/10.pdf

3. Federación Deportiva de Manabí, Registros de resultados deportivos 2020.

4. Reglamento a la Ley Orgánica de Discapacidades. 2012; Disponible en: https://www.consejo discapacidades.gob.ec/wp-content/uploads/down loads/2014/02/ley_organica_discapacidades.pdf

5. Ley del deporte, educación física y recreación. 2010; Disponible en: https://www.deporte.gob.ec/ wp-content/uploads/downloads/2015/03/Ley-delDeporte.pdf

6. Hernández M. 565 *Juegos y tareas de iniciación deportiva adaptada a las personas con discapacidad.* 2017; Barcelona: Paidotribo, 1º Edición.

7. Declaración de Salamanca y Marco de Acción. Salamanca. 1997. Disponible en: http://www. unesco.org/ education/pdf/SALAMA_S.PDF

8. Torralba M, Braz M, Rubio M. La motivación en el deporte adaptado. *Psychology, Society, & Education.* 2017; 6(1), 27-40.

9. Gil, J. A. (2016). *Técnicas e instrumentos para la recogida de información.* Madrid: UNED. Disponible en la Biblioteca Virtual de UNIR.

10. Escudero, J. C. S. (2011). Discapacidad visual y ceguera en el adulto: revisión de tema. *Medicina UPB*, *30*(2), 170-180.

11. Domínguez P, Lezeta X, Espeso E. La enseñanza de la natación a través del juego. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*. 2001; 1(3), 205214.

12. Bustos A. Los invidentes y la natación. *Lecturas: Educación física y deportes.* 2003; 58(4), 1-15.

13. Ortiz E. Propuesta educativa «El agua como medio de enseñanza: importancia de la evaluación». *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación. 2010;* 17, 72-75.