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## LEARNING SPECIFIC SKILLS FOR INICIATION IN SWIMMING TO PEOPLE WITH DOWN SYNDROM

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### Abstract

The integration of people with Down syndrome into society, through education and sport activities, plays an essential role in their personal and professional development. Sports, especially water activities, offer significant benefits, facilitating mobility, protecting joints and promoting both physical and mental rehabilitation. In addition, active participation in sports contributes to increasing self-confidence and autonomy, essential elements for an independent and successful life. Thus, it is crucial that educational and social policies, both nationally and internationally, continue to support the adaptation of these activities to ensure the inclusion and well-being of people with Down syndrome.

People with disabilities are significantly less physically active than those without disabilities, which can lead to a variety of negative health consequences. The consequences of this inactivity lead to heart disease, which is the number one cause of death. People with disabilities face a lot of barriers to becoming more physically active, primarily due to the lack of adequate recreation programs and adapted sports. Although physical activity typically declines during the transition to adulthood, studies have shown that quality youth programs produce a positive physical influence on activity levels during and throughout adulthood.

*Keywords:* Learning, skills, swimming, Down syndrome

### Introduction

Every human being is born with the right to develop himself and improve his capabilities in society. Sometimes, however for one reason or another, there is a possibility of a physical, mental illness that can interrupt a person's optimal and full development. Every child born with Down syndrome (DS) has a real opportunity to lead a sufficiently independent life as long as they are given this privilege. Over the past few years, an increasingly comprehensive foundation has been created regarding the successful achievement of these individuals in all areas of life – children progressing successfully in school, young people with Down syndrome tending to university education, successful professional work, as well as notable results in sports. Thus, through their active participation in sports activity, personal development, self-confidence and integration into the social environment register significant increases.

If at the international level, adapted physical activities constitute a basic component of educational policies, at the national level, they focus their sphere of action on the creation of a complex profile, able to express a distinct philosophy, a specific institutional framework, as well as various competencies of specialists, correlated to the range of disabilities (Bota et. al., 2015).

The aquatic environment can be used for physical and mental rehabilitation, fitness, relaxation, perceptual-motor intervention, self-image improvement, fun and competition. Exercises and games traditionally performed on land have the same objectives when performed in water. Because the aquatic environment minimizes the force of gravity, locomotion is facilitated. At the same time, water eliminates the risk of joint damage, swimming movements being recognized as one of the best exercise programs (Sherrill, 2004).

If we turn our attention to the history of adapted programs in the aquatic environment for people with developmental disorders, it has progressed from hydrotherapy (or water therapy) to the practice of adapted water sports (swimming program and water exercises adapted to people with disabilities). Currently, people with developmental disabilities have the opportunity to participate in a number of aquatic activities including competitive swimming, outdoor swimming, diving, synchronized swimming, water polo, triathlon (competition that includes three different disciplines: swimming, cycling and running) or boating activities (Aleksandrović et al., 2010).

Swimming is one of the most popular sports in the world. Unlike other sports, swimming is considered a life skill that is generally learned to ensure safety and specifically for sporting and competitive purposes. Swimming offers many benefits to participants with disabilities, from the social aspect to improving their health and well-being.

Joan Herrera, in the opening of the Catalan adapted swimming championship, points out that participating in a swimming championship brings out "the best of the sport, because it shows the competitive spirit and its strength as an element of integration" (Engle, 2023).

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Teaching beginner swimming skills to people with Down syndrome requires a personalized approach tailored to their specific needs. Due to reduced muscle tone (hypotonia), increased joint flexibility, and potential delays in motor and cognitive development, the learning process may be slower, but is essential for improved physical and mental health.

#### 1. Initial approach and psychological preparation

- Creating a safe and friendly environment: It is important that people with Down syndrome feel safe and comfortable in the aquatic environment. Instructors should encourage, provide emotional support and convey a positive attitude.
- Adapted pace: Since most of these people may have cognitive delays, it is important that teaching is done in small steps with frequent repetition until the basic skills are mastered.
- Simplified Communication: Verbal instructions should be clear, concise and include visual examples or demonstrations.

#### 2. Basic skills at the beginning of swimming

For people with Down syndrome, basic skills are essential to ensure good orientation in the water and a safe start in this sport.

- a) Adaptation to the aquatic environment
  - Familiarization with the water – this involves gradually introducing the body into the water, splashing and water games to eliminate water anxiety. Allowing them to explore the aquatic environment at their own pace is crucial.
  - Breathing exercises – teaching them the control of their breathing by gently blowing into the water or making bubbles. This helps prevent panic and improve breathing control.
- b) Posture control and buoyancy
  - Buoyancy on back and belly – this helps them feel comfortable in the water and build their confidence. The instructor should support the child or adult with Down syndrome until they are able to float independently.
  - Maintaining balance – exercises that help maintain balance in the water are important to prevent stiffness or panic when the body is moving freely.
- c) Development of basic movements
  - Kick moves – these are among the first motor movements to be taught. It is important to focus on proper coordination and maintaining the rhythm.
  - Arm Movements – gradually, arm movements for simple swimming styles (such as freestyle or backstroke) are introduced. The training must be detailed and tailored to their motor skills.
- d) Coordination of breathing with body movements
  - Coordination between breathing and swimming movements can be difficult for people with Down syndrome. In this regard, repeated exercises to synchronize the breathing with the movements of the arms and legs are recommended.

Over time, specialists have tried to determine the influence of physical exercise and training on the health status and functional capacity of people with DS, but the results of the studies have not been conclusive (Naczka, Gajewska & Naczka, 2021). The same authors claim that the aquatic environment is generally accepted by young people, who participate in this type of physical activity with pleasure. Training in youth with DS produces an improvement in cardiac and cardiorespiratory efficiency, increasing maximal ventilation, muscle strength, and improving aerobic work capacity (Paul et al., 2019).

The initiation stage of learning to swim is crucial for people with intellectual disabilities, as it helps them to adapt to a new and non-human environment that offers them ample opportunities for movement. Specialists in the field consider this stage to be the most critical and most difficult for people with disabilities (Arnheim & Sinclair, 1995).

Before learning the fundamental technical elements of swimming, acclimatization to the water is necessary. This process can be influenced by external factors such as water temperature, depth and ambience around the pool, as well as internal factors such as impairments or associated conditions that the people involved have, age, emotional instability and ability to maintain attention.

From the study of the specialized literature, regarding the development of the child, the idea crystallizes that the main starting point of everything he learns in the first years of life and then, one of the important points of reference for "learning to become sustainable and transferable, it starts from the child's body and emotions" (Gravel S., Tremblay J., 2004). Compared to the description of other fields, the sphere of knowledge and child development is constantly expanding. If over time a great emphasis was placed on the discovery of certain knowledge in fields such as physiology, biochemistry, anatomy, medicine and human behavior sciences, nowadays scientists have turned their attention to the discovery of the child and its role in society.

A particularity specific to learning is the permanent provision of help to the disabled person by the teacher-coach and the execution of the movements simultaneously. In the case of children, for greater safety, it is recommended to hold them during the exercises of walking through water, jumping, moving objects, etc.

Another particularity of learning adapted swimming is the position of the body in the water. When swimming, the body is stretched on the water in a prone or dorsal position with the arms extended in extension of the body. In acquiring the correct body position on the water, it is important for the coach to teach the athlete, first, the position on land through exercises performed together and their continuation at home with the parents. We will continue with exercises in the water, at the edge of the pool, we will use specific and non-specific aids - raft, belt, bar, etc.

Specialists state that significant changes occurred in the case of applying stimulation programs for a minimum of six weeks to a year and a half, which included three to five sessions, lasting between 45 and 60 minutes, and followed both keeping children's physical condition safe, as well as their mental and emotional state (Toseeb et al. 2020).

Learning to swim can be approached from a new perspective, which is not based on preferences related to one of the four styles, but on the biomechanical characteristics that are necessary in the formation of specific skills. Similarly, there is a water acclimatization stage that must be completed before beginning to learn any swimming style. In this stage, the organism moves from a regular natural environment, governed by known biomechanical and physiological laws, to an aquatic environment with different conditions. To facilitate this transition, subjects must learn technical elements related to floating, gliding and specific aquatic breathing.

Throughout the lessons, the following must be considered:

- granting safety to the learner; nothing should be left to chance;
  - the special focus on the health of those who will participate in swimming lessons, knowing that there are people with mental disabilities who are not allowed to practice this sport (people with Down syndrome who have atlanto-axial instability);
  - mastering the basic technical elements, as well as the technique of the four sports swimming procedures, must be done gradually, in successive stages, with precise tasks;
  - the means selected to be used must take into account the needs and capacities of the disabled person;
  - in most cases, the teacher's patience towards the person with an intellectual disability is the key to the correct acquisition of motor skills specific to swimming;
  - verbal communication helps to learn concepts and solve problems;
  - increasing the level of motivation is essential;
  - the new skills to be learned must arouse the interest of the subjects;
  - the teacher must enter the water and use manual guidance in learning;
  - imitating the teacher's movements is the key to learning. Even in the stage of consolidation of movements the teacher "swims on land" simultaneously with his student who is in the water;
  - people with Down syndrome cannot use the sliding exercises specific to each swimming procedure. A skill once acquired incorrectly is very difficult to correct in the case of people with Down syndrome. That is why it is recommended in learning, the use of leg exercises only, followed by the integral swimming technique, specific to the four procedures;
  - while learning the sport swimming technique, the focus will be on the correctness of the movement.
- During the initiation stage of learning to swim, the teacher can use a series of assessment criteria to check the student's progress in learning the technical elements specific to this stage.
- Practicing swimming for people with disabilities contributes to increasing the quality of life by:
- emphasizing athletes' achievements and not their disabilities;
  - the opportunity to know success in competitions with individuals in the same category;
  - improving self-image;
  - the chance to practice aquatic activities adapted to one's own possibilities;
  - adopting a wide range of free movements in water, especially for those who do not have much possibility to move on land;
  - reducing the differences encountered on land between disabled and healthy people due to the fact that, in the aquatic environment, the former can swim alongside the latter.

In the application of the learning program, due to the intellectual disability and, in particular, the mental retardation found in people with Down syndrome, attention is focused on "adapting the content to the level of understanding and the motor possibilities of those who are being worked with" (Arheim & Sinclair, 1995).

As with people without disabilities, the stages of learning the technique of sport swimming procedures are the same, the difference being the time allocated to learning. Several specialists believe that the process of acclimatization with the water is the starting point for all stages of learning the technique of sports swimming procedures (Bălan, 2015), an aspect that needs to be known by the coach responsible for training people with disabilities.

During the process of learning motor skills, subjects can develop generalized motor programs either explicitly or implicitly. Explicit learning consists in the awareness of learning new skills during training, an eloquent example of this can be the feedback provided by the coach regarding improper technique (Donnelly et al., 2016). In this sense, learning leads to a logical progression starting from the basic level of skills, to the achievement of executions as an elite performer at the level of excellence (Spaaij et al., 2014). Implicit learning, on the other hand, takes place unconsciously. For example,

when children try to move a balloon in water by blowing, in the form of play, they are learning aquatic breathing by practicing the inhalation and exhalation phases in the water. Thus, in this process they are not aware that, by default, they are creating the connections necessary to learn a new skill (Fairbrother, 2010).

### Conclusions

Starting from the idea that the learning process involves both sensory and motor information, the multisensory character of learning is recognized among specialists (Teodorescu et al., 2003). The reciprocal relationship between sensory inputs and motor outputs implies the development and inter-connection of perceptual and motor skills, as well as continuous mutual influence (Haibach et al., 2011).

People with disabilities are significantly less physically active than those without disabilities, which can lead to a variety of negative health consequences (Froehlich-Grobe et al., 2016). The consequences of this inactivity lead to heart disease, which is the number one cause of death (Forman-Hoffman et al., 2015; Horner-Johnson et al., 2013; Froehlich-Grobe et al., 2013). If among people with disabilities we have difficulties with the level of physical activity, most normal people form valuable motor skills and habits to be active from an early age through sports and physical activity and keep their sports habits including in adulthood (Wolman & Fraser-Thomas, 2017; Murphy et al., 2016).

On the other hand, people with disabilities face a lot of barriers to becoming more physically active, primarily due to the lack of adequate recreation programs and adapted sports (Rimmer & Rowland, 2008). Although physical activity typically declines during the transition to adulthood, studies have shown that quality youth programs produce a positive physical influence on activity levels during and throughout adulthood (Ahmed et al., 2016; Murphy et al., 2016; Wichstrom, Von Soest & Kvalem, 2013; Kjønniksen et al., 2009).

### References

- Ahmed, M. D., Ho, W. K.Y., Zazed, K., Van Niekerk, R. L. & Jong-Young L. L. (2016). The adolescent age transition and the impact of physical activity on perceptions of success, self-esteem and well-being. *Journal of Physical Education & Sport*, 16(3), 776–784.
- Aleksandrović, M., Čoh, M., Daly, D., Madić, D., Okičić, T., Radovanović, D., Dimitrijević, L., Hadžović, M., Jorgić, B. & Bojić, I. (2010). Effects of adapted swimming program onto orientation in water of children with neuromuscular impairments. *Proceedings of the 5<sup>th</sup> International Congress Youth Sport*, Faculty of Sport, University of Ljubljana, 135-140.
- Arheim, D. D. & Sinclair, W. A. (1995). Physical education for special population. A developmental, adapted and remedial approach. *Prentice-Hall, INC.*, Englewood Cliffs, New Jersey.
- Bălan, V. (2015). *Ghid metodologic pentru învățarea înotului de către copiii cu sindrom Down*. Ed. Discobolul, București
- Bota, A., Teodorescu, S., Popescu, G., Laszlo, H. I., Bălan, V., Moanță, A. D., Săftel, M. A., Maniu, A., Neculăș, M., Oprean, A., Bădescu, V., Ciucurel, C., Petracovschi, S., Nagel, A., Barral, J. & Currat, G. (2015). *Activitățile fizice adaptate ca instrument de incluziune socială*. Programul de cooperare elvețiano-român, Ed. Discobolul, București.
- Donnelly, F. C., Mueller, S. S. & Gallahue, D. L. (2016). *Developmental Physical Education for All Children. Theory into practice*. Ed. Humann Kinetics, Champaign, IL.
- Engine, L. L. C. (2023). The best adapted swimming, at terrassa. *CE Noticias Financieras*, <https://www.proquest.com/wire-feeds/best-adapted-swimming-at-terrassa/docview/2782816224/se-2>.
- Fairbrother, J. (2010). *Fundamentals of motor behavior*. Ed. Human Kinetics, Champaign, IL.
- Forman-Hoffman, V. L., Ault, K. L., Anderson, W. L., Weiner, J. M., Stevens, A., Campbell, V. A., Armour, B. S. (2015). Disability status, mortality, and leading causes of death in the United States community population. *Medical Care*, 53(4), 346–54.
- Froehlich-Grobe, K., Jones, D., Businelle, M. S., Kendzor, D. E. & Balasubramanian, B. A. (2016). Research paper: Impact of disability and chronic conditions on health. *Disability and Health Journal*, 9, 600–608, <https://doi.org/10.1016/j.dhjo.2016.04.007>.
- Froehlich-Grobe, K., Lee, J. & Washburn, R., A. (2013). Disparities in obesity and related conditions among Americans with disabilities. *American Journal of Preventive Medicine*, 45(1), 83–90, <https://doi.org/10.1016/j.amepre.2013.02.021>.
- Haibach, P., Reid, G. & Collier, D. (2011). *Motor learning and development*. Ed. Human Kinetics, Champaign, IL.
- Horner-Johnson, W., Dobbertin, K., Lee, J. C. & Andresen, E. M. (2013). Disparities in chronic conditions and health status by type of disability. *Disability and Health Journal*, 6(4), 280–286, <https://doi.org/10.1016/j.dhjo.2013.04.006>.
- Kjønniksen, L., Anderssen, N. & Wold, B. (2009). Organized youth sport as a predictor of physical activity in adulthood. *Scandinavian Journal of Medicine & Science in Sports*, 19(5), 646–654.
- Murphy, M. H., Rowe, D. A. & Woods, C. B. (2016). Sports participation in youth as a predictor of physical activity: A 5-Year Longitudinal Study. *Journal of Physical Activity & Health*, 13(7), 704–711.
- Naczka, A., Gajewska, E. & Naczka, M. (2021). Effectiveness of Swimming Program in Adolescents with Down Syndrome. *International Journal of Environmental Research and Public Health (MDPI)*, 18(14), 7441, <https://doi.org/10.3390/ijerph18147441>.
- Paul, Y., Ellapen, T. J., Barnard, M., Hammill, H.V. & Swanepoel, M. (2019). The health benefits of exercise therapy for patients with Down syndrome: A systematic review. *African Journal of Disability*, 8, a576.



- Rimmer, J. A. & Rowland, J. L. (2008). Physical activity for youth with disabilities: A critical need in an underserved population. *Developmental Neurorehabilitation*, 11(2), 141–148, <https://doi.org/10.1080/17518420701688649>.
- Sherrill, C. (2004). Adapted physical activity, recreation, and sport. *Higher Education*.
- Toseeb, U., Asbury, K., Code, A., Fox, L. & Deniz, E. (2020). Supporting families with children with special educational needs and disabilities during covid-19. Available online: [https://psyarxiv.com/tm69k?fbclid=IwAR2Ryk8XavUyWwDUGCi9hGIIBdt3FUZMxFLKwVmSQAMhK99qD8WLnA2\\_JAE](https://psyarxiv.com/tm69k?fbclid=IwAR2Ryk8XavUyWwDUGCi9hGIIBdt3FUZMxFLKwVmSQAMhK99qD8WLnA2_JAE).
- Wichstrom, L., Von Soest, T. & Kvalem, I. (2013). Predictors of growth and decline in leisure time physical activity from adolescence to adulthood. *Health Psychology*, 32(7), 775–784.
- Wolman, L. & Fraser-Thomas, J. (2017). “I Am a lifer!” facilitating the transition into non-elite adult sport: A case study of rugby in Canada’s largest city. *Psychology of Sport & Exercise*, <https://doi.org/10.1016/j.psychsport.2017.03.008>.