



Science, Movement and Health, Vol. XXIII, ISSUE 1, 2023
January 2023, 23 (1): 5-12
Original article

THE IMPORTANCE OF FEEDBACK IN THE RELATIONSHIP BETWEEN THE COACH AND THE CHILD DIAGNOSED WITH AUTISM, THE KEY TO SUSTAINABLE PROCESS OF LEARNING TO SWIM

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Abstract

Aim. The essay develops the scope of knowledge in the field of autism with the object of interest the subjects' feedback resulting from the interaction between the swimming coach and the child diagnosed with autism. By studying a child's feedback, we understand the answer, which he transmits as a result of an explanation, demonstration, or recordings received. Feedback can be viewed from the coach's perspective, as the transmitter of information, in relation to the subjects, who have the status of receivers. When the subjects reproduce movements, executions, lines, they transform the role of receivers into that of emitters of responses, at which point the coach becomes the receiver, due to the fact that he is the one who observes the behavior of the subjects.

In order, to create a solid foundation and a sustainable learning process where communication is at the top of the hierarchy and which subsequently generates a close coach-child relationship, feedback is recommended by both sides. If initially, the coach is the one who gives the feedback and the child receives it, in order for the entire learning process to produce positive results and be sustainable, it is necessary for the subject (the child diagnosed with autism) to issue, in turn feedback, and the coach to receive it, to interpret it in order to adjust and optimize the strong points and weak links.

Keywords : autism, children, feedback, swimming, learning

Introduction

Epuran M. & Stănescu M. (2010) state that learning "is a process of communication, of transmitting information." From a cybernetic perspective, information consists of a set of influences exerted on a system (organism), which causes a response (behavior). The command and control components of the cybernetic system are based on the reverse connection (feedback), in which both, the coach and the athlete need accurate and complete information on the results of actions (teaching and assimilation).

As stated by Mitache G., Tudos St., Predoiu R. (2018), man "as a cybernetic system of energetic-informational nature", like a computer, is "programmed", is born, with this capacity to store and process information. Thus, following the learning process, an individual can have knowledge, operating tools and other specific structures that are not innate, but acquired throughout his existence.

According to Napolitano S. (2017), autism, originally called Kaner Syndrome, is considered by the international scientific community as a condition that targets brain function. A person diagnosed with autism presents with a cognitive disorder that presents significant decreases in the level of social integration, communication limitations and repetitive behaviors (Hodgson, Grahame, Garland, Gaultier, Lecouturier & Le Couteur, 2018). Autistic disorders can alter not only cognitive function, but also the physical appearance of individuals. In this regard, water activities have been shown to be a beneficial opportunity for people with autism due to sensory stimulation, providing an appropriate social environment and, of course, involving physical activity (Aleksandrovic, Jorgic, Block & Jovanovic, 2016).

Tanaka H. (2009) states that swimming tones the muscles and improves the functions of the nervous system, reduces the feeling of heaviness of the body, regulates breathing movements and heartbeats, relaxes and combats muscle contractions, which means that pain does not set in during the execution of the movements, facilitating their achievement easily. Simultaneously, it accelerates energy metabolism and activates the venous circulation in the limbs.

A major goal pursued by specialists in the field is to help children with autism develop responses to environmental stimuli. Yilmaz I. et al. (2004) found swimming pool activities to be successful in this regard. The therapeutic use of aquatic activities or swimming practiced by children with autism facilitates language development, forms appropriate behavior and provides a conducive framework for early educational intervention. If the literature indicates that many children diagnosed with autism

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GRRANT SUPPORT : The work of Andra-Ioana Singuran was supported by the project "PROINVENT", Contract no. 62487/03.06.2022 - POCU/993/6/13 - Code 153299, financed by The Human Capital Operational Programme 2014–2020 (POCU), Romania



register positive feedback following the practice of aquatic activities, there are no reports on the effects of swimming on the motor performance and physical condition of children with autism.

Feedback is the method of verbal and/or non-verbal communication of a person or a group regarding the behavior and way it can affect us. Studies show that it contains a perceptual component (what I observe in the other's behavior) and an emotional component (the feelings and experiences caused by the observed behavior). Simultaneously, it is critical to identifying behaviors that can be followed and carried out, considering two necessary aspects: on the one hand, the positive effects produced, and on the other hand, the modification and change of those behaviors depending on the negative impact that he exercises (Tulgan, 1999).

This study aims at a sustainable process of learning to swim based on the solid relationship between the coach and the subjects diagnosed with autism, following their responses (feedback) and the information transmitted by the coach.

Topic addressed

Autism, originally called Kaner Syndrome, is considered a disease that affects brain functions, causing deficiencies in many areas from a developmental perspective. Autistic disorder is a cognitive disorder that influences the lives of individuals and not only, the level of severity of the disorder being high, with the possibility of affecting several aspects (Hodgson et al. 2018). However, autistic disorders are unique in their pattern of deficits and areas of relative strength. Generally, they have lifelong effects on how children learn to be social beings, how to take care of themselves, and how to integrate and participate in the community. The disorder is more common among men than in women, and the statistics continue to rise. It can be present from birth or very early in development, affecting essential human behaviors such as social interaction, the ability to communicate ideas, convey feelings, imagination and establishing relationships with others, affecting daily activities (Schmitz Olin et al., 2017).

Hans Asperger did a series of research in Europe in 1944, where he contributed to a publication about a group of boys with specific social problems. These represented the first suggestions of emotional abnormalities, subsequent research demonstrating the appearance of organic dysfunctions in autistic behavior.

Autism is a developmental disorder of neurobiological origin, is considered as one of the most severe neuropsychiatric disorders of childhood. Autism is the central disorder within a whole spectrum of developmental disorders, known as Autism Spectrum Disorders (ASD), along with Asperger syndrome and Pervasive Developmental Disorders. It manifests itself in early childhood, between 1.6 and 3 years. It cannot be diagnosed at birth because the behavioral patterns on which the diagnosis is made cannot be easily identified before 18 months (<https://autismromania.ro/ce-este-autismul-date-media/>).

In addition to ASD, individuals often have other conditions such as epilepsy, depression, anxiety and attention deficit hyperactivity disorder (ADHD). The level of intellectual functioning in people with ASD is highly variable, from severe mental retardation to higher levels of IQ (<https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders>).

The US Centers for Disease Control and Prevention (CDC) recently published in an article about the rate of 1 in 44 children has autism spectrum disorders. The report records a limit on the territory of the United States and shows an increase in the prevalence of autism spectrum disorder of 241% compared to the year 2000, when statistics recorded 1 case in 150 children (www.helpautism.ro). The same article shows a percentage increased by 22.7% compared to 2016, with the state of California recording 1 case in 26 children, in the 8-year-old age group.

Table 1. Prevalence (rates per 100.000 inhabitants) of ASD in Central Europe, by gender, in the period 2007-2017

ASD prevalence rates in Central Europe			
Year	Total	Male	Female
2007	421,55	645,93	209,35
2008	421,09	645,24	209,09
2009	420,68	644,60	208,84
2010	420,30	643,96	208,59
2011	419,91	643,31	208,34
2012	419,53	642,65	208,10
2013	419,14	641,99	207,85
2014	418,72	641,31	207,60
2015	418,33	640,65	207,36
2016	417,94	640,03	207,13



2017 417,54 639,39 206,89

Source: <https://vizhub.healthdata.org/gbd-compare/>

Worldwide, the World Health Organization indicates a ratio of 1 in 160 people in the sphere of autism incidence. At a national level, local research carried out in 2016 by Help specialists treating autism showed a similar incidence of 1 in 51 children following a sample of 613 children aged between 1 and 3 years, from nurseries and kindergartens in Sector 3, Bucharest . The aim of the campaign was to create the basis of a national statistic on the incidence of developmental delays. The results of the research confirm the inclusion of children in Sector 3 in the world incidence in terms of the total number of children affected by autism spectrum disorders. Of the 613 children included in the project, 12 were diagnosed with Autism Spectrum Disorders, which records a worrying incidence of 1 in 51 children. The diagnosis was recorded more frequently among boys, 1 in 40, than among girls, 1 in 84 (www.helpautism.ro).

Table 2. Prevalence (rates 100.000 inhabitants) of ASD, comparing the European Union (EU) and Romania, in the period 2007-2017

Year	UE	Romania
2007	519,61	413,41
2008	519,65	412,84
2009	519,69	412,32
2010	519,69	411,80
2011	519,70	411,31
2012	519,81	410,71
2013	519,96	410,17
2014	520,18	409,63
2015	520,52	409,08
2016	521,18	408,56
2017	521,52	408,13

Source: <https://vizhub.healthdata.org/gbd-compare/>

Table 3. Prevalence (rates 100.000 inhabitants) of ASD in Romania, pe genuri, in the period 2007-2017

Year	Male	Female
2007	631,23	206,06
2008	630,47	205,74
20-09	629,78	205,44
2010	629,09	205,13
2011	628,42	204,85
2012	627,60	204,51
2013	626,82	204,19
2014	626,05	203,88
2015	625,30	203,57
2016	624,60	203,28
2017	624,04	203,04

Source: <https://vizhub.healthdata.org/gbd-compare/>

A large body of research has demonstrated substantial gains in response to specific intervention techniques over relatively short periods (a few months) in many domains, including social skills, language acquisition, nonverbal communication, and improvements in challenging behavior. Studies conducted over long time have documented changes in IQ scores and baseline deficits (joint attention), in some cases across treatment, that are predictive of longer-term outcomes. However, children's results vary, with some children making substantial progress while others show slower results. Although there is evidence



that interventions lead to improvements, a clear, direct relationship between a particular intervention and children's progress has yet to be drawn.

The committee recommends that the National Institutes of Health and the Office of Special Education Programs of the Department of Education, in cooperation with professional organizations and through support for research and training, emphasizes the promotion and early identification, appropriate screening, and multidisciplinary assessment of children with autism-specific disorders, as is done for children with vision or hearing problems.

The feedback in ASD

A careful reflection on this topic is brought by Zeus P. and Skiffington S. (2000). They define feedback as « what we do when we give our opinion or when we evaluate the behavior of someone or performance. It is any communication that provides information to another person about our perception of them and how their behavior affects us ».

According to Tulgan B. (1999) feedback is seen as a reactive form of communication, a response to some kind of action or the initiation of an action. It provides as examples, the answer to a question, the concretization of a request for information, the answer or the rejection of a viewpoint (of a discussion), suggestions for evaluating the performance in the activity carried out.

To create a solid foundation and a sustainable learning process where communication is at the top of the hierarchy and which subsequently generates a close coach-child relationship, feedback is recommended by both parties. If, initially, the coach is the one who gives the feedback and child receives it, in order for the entire learning process to produce positive results and be sustainable, it is necessary for the subject (the child diagnosed with autism) to issue, in turn feedback, and the coach to receive it, to interpret it to adjust and optimize the strong points and weak links.

Thierman K.S. and Goldstein H. (2013) investigated the effects of written text and pictorial cues via supplementary video feedback on the social communication of 5 students with autism and social deficits. The treatment was implemented twice a week and consisted of 10 min of systematic training using visual stimuli, 10 min of social interaction and 10 minutes of self-assessment using video feedback. Results showed increases in targeted social communication skills after the introduction of treatment, and 1 participant generalized improvements in the classroom. Perceived improvements in the quality of the reciprocal interactions have been reported.

According to Maione L. and Mirinda P. (2006), video modeling was effective in increasing social language in two of the three activities proposed for the study. Video feedback and prompts were also required in the third activity to produce a stable rate of growth in social language. Unscripted verbalization predominated in all three activities. The study aimed to evaluate the effectiveness of video modeling and video feedback in teaching a child with autism to use social language with typical peers during play.

According to R. Mateian (2018) in an interview given to "Career" Magazine, psychologist, member of the Institute of Adlerian Psychology and Psychotherapy in Bucharest and the College of Psychologists in Romania, "We give feedback to children and it is important to be aware of the value that every word they receive has, "as coaches you are seen as both role models and trainers. The child, as a being in the full process of growth and development, especially a child with disorders in the autistic sphere, needs permanent support and encouragement, support that gives him the opportunity to realize, to the extent possible, his own capacities and powers.

Although children with autism spectrum disorders have some of the same disabilities as children with other developmental disorders, they present unique challenges to families, teachers, and others who work with them, particularly through nonverbal and verbal communication, as well as through problems behavioral. Aleksandrovic et al., 2015 compared three studies and their relevance to a group of children with autism. The authors concluded the need for an adjustment for the severity of the autistic disorder, in which the comparison of autistic children with clinically healthy children at the same age level is contraindicated.

In other words, the quality of their performances, behavior, attitudes, answers depends on the way the coaches (trainers) convey the information to the children. Constructive feedback to children consists of information and appreciation of their activity both in the water and at the edge of the pool.

The reactions of each subject constitute the foundation that allows the process to be active and that favors the position of the transmitter, in this case, the coach, in the way that he can modify or change the approach to the whole process according to the children's feedback. It is fundamental that the coach has the quality to communicate clearly, accurately, to make himself understood at the level of the subjects he works with, the ability to detect errors in behavior and to correct, as far as possible, the mistakes, to find solutions and to have the ability to get feedback as expected.

Also, there are situations where the lack of feedback occurs when there is no type of response. Its lack can cause an unwanted behavior to appear or cancel a desired attitude. If the receiver does not give any feedback after any action, whether it is appropriate or not, then the sender will not know what needs to be improved. Faced with this lack of feedback, the individual may feel isolation, indifference to his environment or relationships (Muñoz, 2011).

Importance of swimming in the field of autism



People with autism show a continuous desire for self-stimulation that water can stimulate, this aspect outlines a positive image of aquatic exercise (Kraft, E., & Leblanc, R. 2018). Water contributes to the emergence of a sensory input, a fact appreciated by many subjects with this type of disorder. Due to the cyclic movements and the repetitive way of executing the movements, swimming is considered as a beneficial sport for treating autism.

Most swimming programs are structured around an adapted and organized structure for individuals who need consistency, such as those with autism spectrum disorders. Aquatic activities have been shown to be among the preferred forms of physical activity among people with disabilities, including children with autism. A program specially designed for them in order to adapt them consists of visual supports, sensory supports, communication strategies, physical support and modeling (Kraft & Leblanc, 2018).

Over time, swimming has become very popular among children with autism. The aquatic environment makes it easier to maintain their attention, playing an important role in sensory stimulation as well. Simultaneously, it alleviates behavioral disorders (aggression, stereotypes), favors social integration, stimulates desire and exploration, promotes the growth of self-esteem at the moment when it realizes the perception of movement, plays an essential role in stimulating coordination skills. Thus, by creating and maintaining a consistent program for subjects with the disorder, use of vigorous exercises that ensure continuity in physical activity, stereotyped behavior, learning outcomes, as well as self-esteem can be substantially improved (Verstrat & Hedges, 2015).

In addition to being a life-saving skill, swimming improves mental, social, and physical skills (Pan, 2010). A study of children with ASD who participated in an adapted swimming program showed that 74% improved by at least one level in swimming (Lawson et al., 2014). More specifically, children who started the program with no swimming experience could advance from the swimming orientation option (blowing bubbles, putting body segments in the water) to the swimming initiation phase (floating with support). Parents have reported that skills developed in the context of swimming are transferred to other aspects of a child's life, such as increased strength and endurance, plus decreased stereotyped movements (Yilmaz et al., 2004).

Pinkham et al. (2011) created a pilot study in which twelve children participated, divided into two groups, seven of them in the aquatic exercise group and five in the control group. Finally, the pilot program showed potential for improving swimming ability in children with ASD. The program occurred twice a week with a duration of one session of 40 min. Participants' swimming skills, cardiorespiratory endurance, muscular endurance, mobility skills and satisfaction were measured before and after the intervention. No significant changes were found between the groups, but there were improvements within the intervention group in terms of swimming skills.

Swimming also involves leisure time employment, which is a common concern for this population (Stanish et al., 2017). Children with ASD frequently spend more time engaged in sedentary leisure time spent alone or in the company of their mother (Orsmond G.I., Kuo H-Y, 2011), putting them at greater risk for obesity and decreasing exposure to important skill-building opportunities with colleagues (Curtin et al., 2014). To fulfill the Healthy People 2020 objective of «improving health, physical condition and quality of life through daily physical activity», the establishment of positive leisure habits in children with ASD is indicated. Thus, according to Eversole et al. (2016), swimming is the preferred physical activity for children with ASD compared with that group of typically developing children.

Although swimming involves coordinated movements, it can be learned without the complex demands associated with other sports. The repetition and low social demands of swimming are compatible with the communication disorders and restrictive, repetitive behavior that characterize ASD. Swimming offers benefits over other physical activities, as the buoyancy of water supports body movement in children with motor impairments and may reduce fears of injury associated with physical activity on land (Carroll et al., 2017).

Although there are common characteristics of individuals with ASD, it manifests differently in each individual (Seltzer et al., 2003). Given the unique nature of the disorder, researchers recognize the importance of investigating interventions from the perspective of those experiencing it. Current studies related to swimming and ASD use quantitative methods to investigate the effects of swimming on various outcomes, including skill acquisition, socialization, and health outcomes (Aleksandrovic et al., 2016).

Jull S. and Mirenda P. (2015) conducted a study based on the evaluation of the impact of behavioral skills training, where a significant increase was recorded in the acquisition of new swimming skills among children with autism following their training, the evaluations of the social validity of to the instructors were uniformly raised. To go through a fundamental process of socialization and integration at the group level, as well as to achieve the therapeutic objectives, the coaches use certain swimming techniques with the aim of creating a close relationship between the subject and the water, since a role of the coach is to provide effective information and instruction in the learning process to foster each subject's abilities and build empathy and confidence. Poertner S. & Miller K.M. (1997), states that "our feedback takes on a special meaning." Regarding the activity in the pool, the coach provides information to the athletes (children) with the aim of treating their deficiencies constructively, and for this phenomenon to be productive, real and sustainable, it is necessary to consider what transmits, how it transmits, considering, simultaneously, the responsibility of the subjects.



Image 1. Visual support without object



Image 2. Visual support with object

The more children understand the precautions necessary for water activity, the safer they will be. Even if people with autism do not perform the movements correctly from a technical perspective, they learn how to protect themselves when enter into a swimming pool or pool by being constantly physically active. In a 10-week study by Yilmaz et al. (2004), children with autism learned two strokes much faster than the rest of the strokes in a swimming program designed for normal children. These two movements were legs performed in the back procedure and exiting the pool using the ladder or the side of the pool (Huettig & DardenMelton, 2004). Other feedback provided by parents regarding the improvement of other activities following swimming included: 64.3% of parents stated that subjects were more active during and outside of the program, 20% noted an improvement in sleep quality, 20% reported improved nutrition, 10% increased willingness to exercise, 10% showed greater willingness for physical activity, and 10% demonstrated increased listening skills.

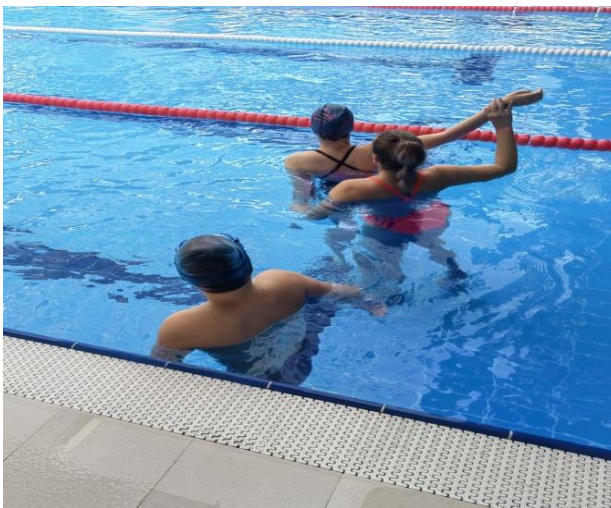


Image 3. Kinesthetic feedback without object



Image 4. Kinesthetic feedback with object

Discutions and Conclusions

In a study on the quality of feedback, Larson M.J. et al. (2010) advocate greater anticipation for feedback positive during a pregnancy on the part of children with ASD, unlike normal children. Overall, Groen et al. (2008) suggest that those with ASD place greater importance on more positive than negative feedback stimuli.

Following the practice of water activities, an individual with disorders on the autism spectrum can review the methods of instruction, swimming skills, safety, barriers or challenges, and the benefits of swimming. Findings indicate positive



experiences as well as the acquisition of prevalent skills when instructional methods are tailored to the unique needs of the child.

The benefits of swimming include the benefits experienced by the child, parent, or family from participating in recreational swimming or formal instruction. The benefits are vast and frequently include ideas related to the social environment, parental support, relaxation, exercise, meaningful activities, and swimming as therapy.

Aknownowledgements

The work of Andra-Ioana Singuran was supported by the project "PROINVENT", Contract no. 62487/03.06.2022 - POCU/993/6/13 - Code 153299, financed by The Human Capital Operational Programme 2014–2020 (POCU), Romania.

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