

Impact of Adapted Aquatic Physical Activity on Social Understanding of Two Young Autistic People (Case of Swimming)

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ABSTRACT

Social understanding in children with autism represents a barrier to the integration of autistic people into Arab societies and specifically Tunisian society. Considered as a handicap, autism remains a real public health problem. If the contact with the water allows a moment of playing and relaxation, the practice of regular aquatic activities can become a real asset in the daily life. The present study aims to prove that regular water activities for children with autism could improve the social understanding of autistic people and thus facilitate their social integration into Tunisian society. To do this, we used two investigative tools, namely semi-directive interviews and direct and non-participatory observation with two young autistic Tunisians, a girl and a boy. The results of the analysis of the data of the different themes (motor stability, imitation, pointing, sharing and eye contact) indicate great improvements in social understanding.

Keywords: Autism, adapted physical activity, social understanding

INTRODUCTION

The quality of social understanding among children with autism is a big problem in society. As a disability, autism represents a real public health problem.

«Autism is particularly characterized by a disturbance of social relations, that is to say that people with autism have difficulty communicating, in a social situation, appropriately» (Jeantin, et al. 2009).

This developmental pathology generates a disorder of several process areas, including social understanding.

In fact, autistic children have difficulties in developing interpersonal relationships, a lack of reactivity to others, problems of knowledge of social and moral values or of interest to them, whereas it is essential in these situations to anticipate the social environment. We have therefore chosen an integration program that consists in proposing a practice of adapted physical activity (swimming based on aquatic games) since this discipline represents "a privileged way for the child with autism to develop his or her abilities in all the functions that need to be improved, both in the sensorimotor fields, as well as in those of communication and socialization, because it provides a motivating framework, linked to the pleasure of practicing sports and to esteem of self it engenders" (Massion, 2006).

METHODS

We based our research on two investigative tools: (i) semi-directive interview and (ii) direct and

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non-participatory observation. Interviews and the observation were conducted with two Tunisian young autists, a girl (named MT) and a boy (named RS) (Tables 1 and 2).

Before starting our research, we obtained the agreements of the parents of our two interlocutors in the form of signed consents. The autism of our two interlocutors was certified by experienced psychologists from an early age. The interview was inspired by the differential scale of intellectual efficiency (E.D.E.I) (Ben Rejeb, 2001) and contains the following dimensions:

1- Social references, 2- The rules of social behavior, 3- The code of interpersonal relations, 4- Knowledge of social values and 5- Knowledge of moral values.

The observation grids are made with regard to following different social themes: Motor stability, The sharing, imitation, the score, visual contact. The experiment took place during the May and June 2018 in the swimming pool of the Higher Institute of Sport and Physical Education of Kef, Tunisia. All sessions are held regularly every Monday, Wednesday and Saturday at 14h (Table 3). So, we did a study of the interactive

abilities of autistic children based on water games with the use of balls of different sizes and colors, in situations of social interaction with coaches and other children.

RESULTS

Thanks to the synthesis of the data in the observation grids of two autistic children, we notice several evolutions in the different social domains (Tables 4 and 5). At the end of the observation, we identified that these two autistic children were at the extremes of social understanding:

Our study tends to show that aquatic activities can improve problems related to the dysfunction of children with autism. Yilmaz et al., (2004) have shown that swimming allows children with autism to develop a better perception of the body and an improvement in social integration.

The participation of people with autistic disorders in a collective activity could give them a sense of belonging to a group and thereby facilitate their social integration. The purpose of this research was to see if aquatic activities would have a positive influence on the communication and social understanding of young people with autism.

Table 1: Clinical vignette of MT

Date of birth	Number of brothers and their ages	Special interests	Mother's age	Father's age	History of illness
17/08/2009	1 brother (15 years)	Swimming	47	55	<ul style="list-style-type: none"> -The discovery of the disease: March 20, 2013 - At the age of 1 year and a half "MT" utters a few words as well as all the children of this age: Papa, Mama, ... -MT began to lose language at the age of three. -In 2013 Ms. H began to consult professionals in the field. -First exam: April 06, 2013 with the child psychiatrist. April 08, 2013: with the speech therapist -According to the results of the professional exams "I was shocked". The child psychiatrist informs me that my daughter was autistic. -5 years of therapy from March 2013 until today.

Table 2: Clinical vignette of RS

Date of birth	Number of brothers and their ages	Special interests	Mother's age	Father's age	History of illness
21/10/2001	-	Swimming	42	47	<ul style="list-style-type: none"> -RS is my first child who is a boy. -At the age of 2 he uttered no words. -Uncarious behaviors "he does not fix the eye and he does not point". - Signs of abnormality in terms of language and gait. -Some turmoil crises. - At the age of 4 years, consult a child psychiatrist. -After the diagnosis I was shocked. -My mother worries too much for the future of her son, that's why she refuses to have another child (carrier of autism). -15 years of therapy until today.

Table 3: Educational intervention project

No. of sessions	Objectives
S1 to S5	Being able to develop motor stability in aquatic activities: the body and the water (throwing, catching, jumping, ...), sensory exploration of objects (shooting, passing, receiving).
S6 to S10	Being able to throw the ball and react following a visual signal.
S11 to S14	-For the subject n° 1 (MT) : To be able to arouse the desire to accept the collective games. - For subject n° 2 (RS) : Being able to arouse desire and act in the aquatic environment. (RS).
S15 to S18	To be able to improve social imitation (for example, to make an agreement or goodbye of the hand) and to carry out a social exchange (with non-verbal communications).
S19 to S24	Being able to maintain pointing gestures.

DISCUSSION

The results of the interview data analysis and observation grids show a change in motor stability, eye contact, sharing, imitation, and pointing, as “The environment Aquatic offers a space of mediation particular for the autistic persons by its consistency and what it produces in matter of sensoriality “ (Le Paven, et al. 2007).

Previous studies, already showed that APA may be beneficial for autistic people. Sport would develop their social understanding, which can make them more empowered in their lives (Brun, 2014; Bonnon et al. 1992; Kwiat et al. 1999; Dugas & Moretton, 2012).

Our results are consistent with those of Dykens & Cohen (1996), Grandisson et al. (2012); Gençöz (1997) and Khosla et al. (1988) who showed that sport was more than beneficial for people with autistic disorders.

According to these studies, adapted physical activities are beneficial for people with different disorders, sports activities are considered as a factor of well-being.

“It must be remembered here that the child with autism is a developing being, who learns as the normal child, but at a slower pace and that the dysfunctions that it presents can be compensated in whole or in part by the exercise”. (Massion, 2006).

Aquatic activities are in fact a privileged way for the child with autism to develop his abilities in

Table 4: Evolutions in the different social domains (MT)

Number of sessions	Motor stability	Visual contact	The sharing	Imitation	The score
S1	-	-	+	-	-
S2	+	-	+	-	-
S3	+	-	+	+	-
S4	+	+	+	+	+
S5	++	+	+	+	+
S6	++	+	+	+	+
S7	++	+	++	+	+
S8	++	+	++	+	+
S9	++	+	++	+	+
S10	++	+	++	+	+
S11	++	+	++	+	+
S12	++	+	++	+	+
S13	++	+	++	+	++
S14	++	+	++	+	++
S15	++	+	++	+	++
S16	++	++	++	+	++
S17	++	++	++	+	++
S18	++	++	++	+	++
S19	++	++	++	+	++
S20	++	++	++	+	++
S21	++	++	++	+	++
S22	++	++	++	+	++
S23	++	++	++	++	++
S24	++	++	++	++	++

(-) (0) = Total absence, (+) (1) = Average progression, (++) (2) = An evolution

all the functions that need to be improved, as well in the fields of social comprehension, as in those of communication and socialization, because they provide a motivating framework, linked to the pleasure of sport. Our results indicate major improvements in the social understanding of young autistic people following the practice of aquatic physics activities.

If we take each subject apart, we notice that sharing and imitation are two elements of success that have set an evolution from the first sessions. Indeed, Piaget (1948) confirms that “the phenomenon of imitation among young children as a process that participates in the appearance of the “symbolic function” insofar as it ensures the passage between sensory-motor intelligence and pictorial representation. This capacity facilitates, in particular, the acquisition of social language and know-how and consequently “communication and language”. (Piaget,1948).

Table 5: Evolutions in the different social domains (RS)

Number of sessions	Motor stability	Visual contact	The sharing	Imitation	The score
S1	-	-	-	+	-
S2	-	-	-	+	-
S3	-	-	+	+	+
S4	-	+	+	+	+
S5	+	+	+	+	+
S6	+	+	+	+	+
S7	+	+	++	+	+
S8	+	+	++	+	+
S9	+	+	++	+	+
S10	+	+	++	+	+
S11	+	+	++	+	++
S12	+	+	++	+	++
S13	+	-	++	+	++
S14	+	-	++	+	++
S15	+	+	++	++	++
S16	+	+	++	-	++
S17	+	+	++	-	++
S18	++	+	++	++	++
S19	++	+	++	++	++
S20	++	+	++	++	++
S21	++	+	++	++	++
S22	++	++	++	++	++
S23	++	++	++	++	++
S24	++	++	++	++	++

Thorndike (1928) was one of the first authors to study the phenomenon of imitation and its role in child development. He defines imitation as “learning to do an act by seeing it do”. (Bendiouis, 2015).

When MT, we notice that there is a progression in motor stability after one day. Compared to RS, in the first four sessions motor stability is zero, which requires more time for us to reach a satisfactory level of learning.

Although visual contact in both autistic children remained stagnant in the first three sessions. Since autistic people take time to adapt and integrate into a new environment and especially with new people.

For MT the scoring domain has evolved from the third session, when at RS it is from the second session that we observe a good improvement. Physical activity is essential for the child with autism awareness of his body and its safe environment, knowing that it

helps to reduce his frustrations. Through Adapted Physical Activities, children with autism can learn in a social environment and thus develop their social understanding.

CONCLUSION

During this research, we showed the nature of the contribution of a better quality of life (regular playful aquatic practice) for children with autism would be able to be beneficial to the understanding and social adaptation of young people autistic. If contact with water allows a moment of relaxation and play, the practice of regular aquatic activity can become a real asset in the daily life of children with disabilities.

REFERENCES

- Bendiouis, S. (2015). Imitation and communication in young children with autism (Doctoral dissertation, University Paul Valéry-Montpellier III).
- Bonnon, M., Therme, P., & Noël-Jorand, M. C. (1992). Aspects psychologiques de l'adaptation à l'altitude. *Recherches en APS*, 3, 463-481.
- Brun, A., & Roussillon, R. (2014). *Formes primaires de la symbolisation*. Dunod.
- Dugas, E., & Moretton, J. P. (2012). Quel choix d'activités physiques et sportives dans une perspective d'apprentissage pour des jeunes ayant des troubles cognitifs ou des troubles psychiques?. *ALTER-European Journal of Disability Research/Revue Européenne de Recherche sur le Handicap*, 6(1), 39-56.
- Gençöz, F. (1997). The effects of basketball training on the maladaptive behaviors of trainable mentally retarded children. *Research in developmental disabilities*, 18(1), 1-10.
- Grandisson, M., Tétreault, S., & Freeman, A. R. (2010). Le sport: promoteur de la santé et de la participation sociale en Déficience Intellectuelle. *Revue Francophone de la Déficience Intellectuelle*, 21, 54-65.
- Jeantin, A., Blanc, R., Fontaine, R., & Barthelemy, C. (2009). Neuropsychologie des difficultés d'ajustement social de l'enfant avec autisme en situation d'intégration scolaire en milieu ordinaire: revue de questions. *Approche Neuropsychologique des Apprentissages chez l'Enfant (ANAE)*, 101, 59-68.
- Khosla, B., Malhotra, R., & Dutt, V. (1988). Sports as intervention for socialization and integration of the mentally handicapped. *Indian Journal of Disability & Rehabilitation*, 2(2), 19-23.
- Le Paven, M., Roesslé, S., Roncin, E., Loquet, M., & Léziart, Y. (2007). La dévotion dans les activités physiques sportives et artistiques non scolaires. *Education et didactique*, 1(3), 9-29.
- Massion, J. (2006). Sport et autisme. *Science & sports*, 21(4), 243-248.
- Ménesguen, Y., Smirr, J. L., Pillet, G., Alléaume, R., Maruani, A., Zaquine, I., & Jacobowicz, L. (2008). Sources de photons intriqués en polarisation: travaux pratiques de physique quantique. *Bulletin de l'Union des Physiciens*, 102, 61-80.
- Nadel, J. (2011). Imitate to grow, development of the baby and the child with autism. Paris: Dunod.
- Piaget, J. (1948). Le langage et la pensée chez l'enfant: Études sur la logique de l'enfant.
- Rejeb, R. B. (2001). Intelligence, test and culture: the Tunisian context. Editions L'Harmattan.