

## Experimentation of a special didactics proposal for youth disabled in swimming

### Sperimentazione di una proposta di didattica speciale per i giovani disabili nel nuoto

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The aim of this research work is to propose a special didactics offer that can also guarantee disabled young people the opportunity to practice swimming. The sports system, and therefore also that of swimming activities, has the duty to pursue the goal of accessibility to all, and it is clear how important it is to structure a sports didactics strategy aimed at the sports development of disabled children with consequent positive effects on social aspects, such as inclusion and increased self-esteem and autonomy. In this regard, we will analyze the experimentation inherent a field research carried out on a sample of 18 disabled children, over a period of 10 weeks, in order to identify the most effective and efficient proposal for special sports didactics both in athletic and social terms.

**Keywords:** special didactics; sport; disabled young people; swimming; adapted sports activity

Lo scopo del presente lavoro di ricerca è quello di proporre un'offerta di didattica speciale in grado di garantire anche ai giovani disabili l'opportunità di praticare la disciplina del nuoto. Il sistema sportivo e quindi anche quello delle attività natatorie ha il dovere di perseguire l'obiettivo dell'accessibilità per tutti, ed appare evidente quanto sia importante strutturare una strategia di didattica sportiva che miri allo sviluppo sportivo dei bambini diversamente abili con conseguenti ricadute positive su aspetti sociali quali l'inclusione e l'incremento dell'autostima e dell'autonomia. A tal proposito si analizza la sperimentazione inerente una ricerca sul campo condotta su un campione di 18 bambini disabili per un periodo di 10 settimane, al fine di individuare la più efficace ed efficiente proposta di didattica sportiva speciale sia in chiave atletica che sociale.

**Parole chiave:** didattica speciale; sport; giovani disabili; nuoto; attività sportiva adattata

The manuscript is the result of a collective work of the authors, the specific contribution of which is to be referred to as: Introduction and Conclusions are to be attributed to Antonio Ascione; Paragraph n.1 is to be attributed to Domenico Tafuri; Paragraph n.2 is to be attributed to Davide Di Palma; Paragraph n.3 is to be attributed to Francesco Peluso Cassese.

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## Introduction

Swimming is one of the most practiced sports by the disabled; as proof of this, its presence in the Paralympic program dates back to the 1960 edition. The disciplines to put oneself to the test with are: free style, backstroke, breaststroke and butterfly, while the expected distances are the following (Di Palma, 2018; Pack, Kelly, Arvinen-Barrow, 2017).



Swimming Style	Distances
Freestyle	50 m, 100 m, 200 m, 400 m, and the 5 km distance in open water
Backstroke, Breaststroke and Butterfly	50 m and 100 m
Individual Mixed	150 m and 200 m
Free Style and Mixed Style Relay	4 x 100 m and 4 x 50 m

**Tab.1: Swimming Styles and related distances**  
Source: Our source

As well as being distinguished by gender and age categories, the athletic swimming activity presents, as in the other Paralympic disciplines, a further breakdown, that by classes, which has been necessary in order to guarantee the athletes with different degrees and types of disability the participation in balanced competitions. Indeed, classes are assigned to agonist swimmers following classification visits, which differ according to whether the pathology of the athlete is physical, visual, intellectual and/or relational (Arrigoni, 2012; Wilson, Clayton, 2010).

The classifications by physical handicap (be it of medullary, orthopedic or cerebral origin) are of “functional” type, and include three phases (medical examination, swim evaluation, evaluation of the technical gesture in the race). The athlete is assigned, by a Classifier Doctor and a Classifier Technician, a score corresponding to the functions that can still be expressed, and he is then included in one of the classes provided (the lower the class, the lower the swimmer’s residual skills). The classes by physical handicap are as follows (Wilson, Clayton, 2010; Wu, Williams, 1999): from S1 to S10 for backstroke, freestyle and butterfly swimming; from SB1 to SB9 for Breaststroke swimming; from

SM1 to SM10 for mixed style swimming.

Breaststroke has been separated from other styles because of the greater influence that the lower limbs have at a propulsive level, compared to the upper ones.

For blind or partially sighted subjects, a specialist visit by a Classifier Ophthalmologist is scheduled, who, once assessed the athlete's visual area and/or visual acuity, will include him in one of the three classes: S11 – total blind; S12 and S13 – partially sighted.

Athletes with intellectual and/or relational disabilities are subjected to tests aimed at assessing certain elements, such as:

- The IQ: if scored below the 75-70 range;
- Significant lack or reduction in adaptive functions in at least two of the following conditions or situations: communication, personal care, behavior in domestic life, social and interpersonal skills, autonomy, adaptation to work and leisure time.

The IPC international class is unique and corresponds to the S14. In Italy there is also the C21 class dedicated to athletes with Down syndrome.

Obviously, in addition to these considerations, mainly referring to a swimming approach for disabled athletes, it is important to underline the importance of this discipline also for all those who, although disabled, practice it at an amateur level (mainly children).

In fact, irrespective of the competitive aspect, there are many positive outcomes a disabled person can pursue through the discipline of swimming (Di Palma, 2018). For example, one of the many benefits due even only to the submersion of the body in water is the decrease in pain, often caused by the various incorrect postures due to spasticity. Furthermore, it is possible to increase mobility and the joint width as well as the relaxation of the tissues and muscles, so as to improve the general physical conditions (Dyer, Deans, 2017; Dunn, 1997; Stan, 2012).

The desire to go to a swimming facility or a recovery center with pools dedicated to swimming, with a frequency of 1/2/3 times a week, will also encourage a greater social and motivational integration of the individual, stimulating again passions and wishes in him that he partly forgot (Bailey et al., 2009; Carrol, 2017).

Learning, and the development of that residual potential of the various brain areas, will thus be subject to greater work, thereby increasing what in Maslow's pyramid is called self-realization and self-esteem. All this is amplified if linked to children with disabilities (Di Palma, 2017; Summer, 2017; Wright J., Cowden, 1986).

Therefore, if we think that, only by living this experience, are a series



of critical issues are limited and potential psycho-physical and social benefits sustainable over time are developed, it is worth bringing as many individuals as possible in the swimming pool.

In this regard, the willingness to experiment with the methodologies of motor activity adapted in swimming for disabled children, able to determine a proposal for effective and efficient special sports didactics was demonstrated.

## 1. Method

The research study was characterized by the involvement of 18 children (only male), aged 6-11, with slight mixed-type disabilities (specified in table 1 with the codes equivalent to those recognized by the International Paralympic Committee), who were subjected to basic exercises of the discipline of swimming for 20 meetings lasting for one hour each over 10 weeks, with a regular frequency of 2 weekly meetings, with the aim to understand which were the adapted forms of the classic basic exercises that are usually proposed for non-disabled subjects.



Children	Disability Codes
1	S10 - SB9
2	S9 – SB9
3	S10 – SB8
4	S10 – SB9
5	S10 – SB9
6	S10 – SB9
7	S10 – SB9
8	S9 – SB9
9	S9 – SB8
10	S10 – SB9
11	S10 – SB9
12	S10 – SB9
13	S9 – SB8
14	S9 – SB9
15	S10 – SB8
16	S10 – SB9
17	S10 – SB8
18	S10 – SB9

**Tab. 2. Disability Codes for Children in the Research Sample**

Here below the sports didactic offer for non-disabled children, di-

vided into 7 levels increasing by skill level recognized by Italian Swimming Federation (Barba et al., 2007; Bíró et al., 2007; Wiesner, 2008).

In this regard, it should be noted that the 18 children who comprised the sample on which the research was carried out, had different levels of swimming skills, which also developed over the weeks and allowed for an accurate assessment for each of the 7 levels.

In collaboration with federal coaches, it was observed the ability of children to carry out the various exercises to assess which could be included in the adapted didactics offer, which should undergo changes and which could be eliminated.

**Scheme 1: Classic proposal of sports didactics for non-disabled children**

<i>LEVEL 1</i>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: Touchable bottom	Stand up, dive under water for at least 3 seconds by holding the breath and breathe out of the water.
Exercise 2 - Key element: «breathing» - Environment: Touchable bottom	Stand up, dive under water for at least 3 seconds, and breathe out under water with the nose and/or the mouth in a clearly visible way.
Exercise 3* - Key element: «floating» - Environment: Water at chest level	Float for at least for 3 seconds in a flat ventral position, by holding the head correctly, with arms stretched sideways.
Exercise 4 - Key element: «slipping» - Environment: Water at chest level	Push off from the edge or the stairs of the swimming pool in ventral position for at least 3 seconds, with arms stretched forward, without beating the legs up and down. Face submerged in water.
Exercise 5*: Dive - Environment: Touchable bottom	Free dive from the edge of the pool by standing up, immediately diving under water completely.
<i>LEVEL 2</i>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: Touchable bottom	Dive under water, keeping eyes open and recognizing an object, number or color underwater.



Exercise 2 - Key element: «breathing» - Environment: Touchable bottom	While standing up: breathe in, dive under water and breathe out completely under water. The exercise must be performed four times without interruption and without drying one's own eyes. Purpose: regular breathing rhythm.
Exercise 3* - Key element: «floating» -Environment: Touchable bottom	Float for at least 5 seconds on the back, with arms held stretched sideways or up behind the head.
Exercise 4 - Key elements: «sliding and legs propulsion» - Environment: Touchable bottom	Slip for at least 2 m in ventral position, pushing off from the edge or the bottom, with arms stretched forward. Then slide again for 2 m with legs propulsion.
Exercise 5 - Environment: Touchable bottom	Standing-up dive in deep water to dip into the water (the supporting person is in the water).
<b>LEVEL 3</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - «slipping and breathing» - Water at shoulder level	Push off from the edge, slide for at least 5 seconds in ventral position below the water surface by holding the head in the correct position, breathe out in a visible way.
Exercise 2 Key element: «slipping» - Water at shoulder level	Slip for at least 5 seconds in dorsal position, push off from the edge or the bottom, with arms stretched up behind the head.
Exercise 3* - Key element: «propulsion». In deep water	8 m of alternating flapping of the legs in dorsal position. Hands can paddle to the sides of the body, or the arms remain stretched behind the head.
Exercise 4 - Key elements: «propulsion and breathing». In deep water	8 m of alternating flapping of the legs in ventral position. Hands can paddle on the sides of the body or with the arms stretched in front of the head. A propulsion movement of the arms is recommended to facilitate breathing (eg pedalos).
Exercise 5: Flip - In deep water	Forward flip from the edge of the pool in deep water
<b>LEVEL IV</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: At water's edge height: from the hips to the chest	From the upright position: upside down crawl, followed by a forward flip with visible breathing out movement from the nose.

Exercise 2 - Key element: «sliding» - Environment: At water's edge height: from the hips to the chest	Dive under water, by pushing off from the edge of the pool, into a completely submerged circle held vertically (without propulsion movements).
Exercise 3* - Key movements: «body movement, propulsion with the legs, breathing» - Environment: Water at least at shoulder height	Push off from the pool wall, performing 10-15 m with alternating legs strokes in a ventral position, with an arm stretched forward. Turn on a side to breathe in. Go back to the ventral position to breathe out. Complete at least 3 consecutive cycles without interruption.
Exercise 4* - Key movements: «propulsion with legs, arms and breathing» - Environment: In deep water	Make 10-15 m by moving forward in ventral position, with alternating legs strokes and propulsion movement of the arms in front of the head, breathing out into the water. The arms slide under the water and in the front, and then pull back just below the shoulders.
Exercise 5 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Perform 15-25 m in dorsal position with alternating legs strokes and free traction of the arms. The arms are recovered out of the water.
<b>LEVEL 5</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1* - Key movements: «propulsion with legs and breathing» - Environment: In deep water	Perform 15-20 m of alternating legs strokes in ventral position, one arm extended in front of the head and the other along the hip: breathe out under water, breathe in by rotating on the extended arm, and simultaneously lift up the elbow of the arm along the hip, then lower the arm, turn the head and breathe out.
Exercise 2 - Key movement: «propulsion» - Environment: Water at chest level	Push off from the pool wall, move freely under water for 5 m, and pass through the circles, with propulsion of the alternating legs and breaststroke style arms movements.
Exercise 3* - Key movement: «propulsion with the legs» - Environment: In deep water	Push off from the pool edge with alternating legs strokes: 15 m, torsos rolling by following two lateral rotations from the ventral position to the dorsal and vice versa. Throughout the exercise, the arms remain stretched upwards behind the head.



Exercise 4 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Swim for 25m: 5-8m in ventral position with legs strokes and traction of the alternating arms (underwater traction and aerial recovery phase) breathing on the side: then perform directly 5-8m in dorsal position with aerial recovery through outstretched arms; regular traction of the arms.
Exercise 5: Dip* - Environment: Depth of water suitable for the child' height (1.5 m min.)	Dive upside down; from the edge, while crouching down or standing, then slide towards the bottom of the pool.
<b>LEVEL 6</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key movements: «propulsion with legs and arms; coordinating breath »Environment: In deep water	Swim for 15 m in crawl style in ventral position with alternating legs strokes and alternating arms traction underwater, by breathing properly on the side. Recovery of the arms occurs in the air.
Exercise 2 - Key movement: “propulsion with the arms” Environment: Water at chest or shoulder level	After pushing off from the edge: 5-8 m with the sole propulsion of the hands. The elbows are turned outwards, push off obliquely with movements inwards/outwards of forearms and hands below the torso; the face is kept in the water, with a correct position of the head (do not use the arms, like in the breaststroke swimming, or the legs)
Exercise 3 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Perform 20-30 m in ventral position with alternating legs strokes and breaststroke style arm movements. Breathe forward and at every arm traction.
Exercise 4 - Key movement: “legs propulsion” Environment: In deep water	With the body submerged vertically, in deep water, stay on the surface for 30 seconds: perform the movements of the legs with the feet in dorsiflexion and directed outwards. The arms can make small support movements, such as paddling.
Exercise 5* - Key movement: “propulsion with the legs” - Environment: In deep water	Perform 10-15 m with simultaneous movement of the legs (propulsion / push off, feet turned outwards), on the belly or on the back, the position of the arms remains free.



<i>LEVEL 7</i>	
EXERCISES, ELEMENTS AND ENVIRONMENT	ELEMENTS OF THE DIDACTIC OFFER
Exercise 1 - Key elements: «propulsion and sliding» - Environment: Water at shoulder level	First of all, dive and swim in the direction of the pool wall from a distance of at least 5 m, turn under water and collect an object from the bottom at 2 m from the wall.
Exercise 2 - Key movement: “complete movement of the body” - Environment: Water at shoulder level	By pushing off from the wall, perform at least 4-6 m with butterfly stroke style movement with a visible imprinting from the head / shoulders (without jumps and legs performed in butterfly stroke style, while the legs remain relaxed).
Exercise 3 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Swim in breaststroke style for 16-25 m. Propulsion/push off movement with feet turned outwards and breaststroke style movement of the arms, with elbows bent in the traction phase. Correct coordination between arms and breathing. Breathe out visibly underwater.
Exercise 4: Water Safety Control Water knowledge and safety skills - Environment: In deep water	The three exercises must be performed in succession, without breaks: <ul style="list-style-type: none"> <li>- Perform a flip or a somersault in deep water (the head must go completely under water)</li> <li>- Remain still the surface for 1 minute, either by lying on the back, pedaling vertically or making alternating leg movements. Also perform a surface screw turn around the longitudinal axis as an orientation exercise in space.</li> <li>- Swim for 50 m</li> </ul>



**\*The complete performance of these exercises is necessary to access the next level.**

**Source: Our source Processing**

## 2. Results

The first outcome that should be stressed is that all the children involved in the project completed it, thus with drop out rate equal to 0.

Furthermore, the research produced interesting outcomes regarding some adaptation elements to be applied to the swimming exercises for non-disabled children, in order to make them accessible and productive to disabled children. These outcomes are shown in the following table, which represents a specific special sports didactic proposal for

children with slight disability (therefore with a high level of residual capacity, as evidenced by the codes of disability degree in swimming assigned to each child).

Only the exercises that all children were able to do and that required small changes that did not modify the didactic nature of the swimming exercise were included.

The swimming didactic proposal adapted does not differ according to the degree of disability because, although different, all disabled children were endowed with a high level of residual capacity:

- Crawl, Butterfly, Backstroke: IPC code between S9 - S10;
- Breatstroke: SB8 - SB9.

This condition also justified that an educational exercise / objective was included in the special proposal only if it was achieved by all children.



**Scheme 2: Proposal for special sports didactics for disabled children**

<i>LEVEL 1</i>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: Touchable bottom	N.A. (NOT ADAPTED)
Exercise 2 - Key element: «breathing» - Environment: Touchable bottom	N.A.
Exercise 3* - Key element: «floating» - Environment: Water at chest level	Floating at least for 3 seconds in flat ventral or dorsal position, by holding the head correctly, with arms stretched sideways.
Exercise 4 - Key element: «slipping» - Environment: Water at chest level	Dragging supporter: in ventral or dorsal position with arms stretched forward. The supporter drags by grabbing the hands, or the shoulder blades in dorsal position.
Exercise 5: Dive* - Environment: Touchable bottom	Free dive from the edge of the pool by standing up or sitting down, immediately diving under water completely.

<b>LEVEL 2</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: Touchable bottom	N.A.
Exercise 2 - Key element: «breathing» - Environment: Touchable bottom	While standing up: breathe in, dive under water and breathe out completely under water. The exercise must be performed four times without interruption and without drying one's own eyes. Purpose: regular breathing rhythm.
Exercise 3* - Key element: «floating» -Environment: Touchable bottom	Float for at least 5 seconds on the back or in ventral position, with arms held stretched sideways or up behind the head.
Exercise 4 - Key elements: «sliding and legs propulsion» - Environment: Touchable bottom	Slip for at least 1 m in ventral position, pushing off from the edge or the bottom, with arms stretched forward. Then slide again for 1 m with legs propulsion.
Exercise 5 - Environment: Touchable bottom	Standing-up or sitting-down dive in deep water to dip into it (without touching the bottom of the pool).
<b>LEVEL 3</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - «slipping and breathing» - Water at shoulder level	N.A.
Exercise 2 Key element: «slipping» - Water at shoulder level	Slip for at least 5 seconds in dorsal position, pushing off from the edge or the bottom, with arms stretched upwards or along the body.
Exercise 3* - Key element: «propulsion». In deep water	Twenty seconds of alternating legs strokes in dorsal position. Hands can paddle on the sides of the body, or the arms remain stretched behind the head.
Exercise 4 - Key elements: «propulsion and breathing». In deep water	Fifteen seconds of alternating legs strokes in ventral position. Hands can paddle on the sides of the body or with the arms stretched in front of the head. A propulsion movement of the arms is recommended to facilitate breathing. Breathe in for 3 times with a forward propulsion motion in between.



Exercise 5: Flip In deep water	Forward or lateral flip on the longitudinal axis from the edge of the pool into deep water.
<b>LEVEL 4</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key element: «breathing» - Environment: At water's edge height: from the hips to the chest	If the disabled child fails to perform a forward flip, he can be turned around on himself for several times, like a trunk, by a supporter. Breathe out visibly from the nose.
Exercise 2 - Key element: «sliding» - Environment: At water's edge height: from the hips to the chest	Dive under water, by pushing off from the edge of the pool (or with a support by someone), into a completely submerged circle held vertically (without propulsion movements).
Exercise 3* - Key movements: «body movement, propulsion with the legs, breathing» - Environment: Water at least at shoulder height	If the child cannot push off with his legs, he can be dragged by grasping his arm.
Exercise 4* - Key movements: «propulsion with legs, arms and breathing» - Environment: In deep water	N.A.
Exercise 5 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Perform 15-25 m in dorsal position with alternating legs strokes and free traction of the arms. Arms recovered subsequently in the water.
<b>LEVEL 5</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1* - Key movements: «propulsion with legs and breathing» - Environment: In deep water	If the child cannot push off with his legs, he can be dragged into the water by someone grasping his stretched arm.
Exercise 2 - Key movement: «propulsion» - Environment: Water at chest level	Push off from the pool wall, move freely under water for 3 m, pass through the circles, with propulsion of the alternating legs and breaststroke style arms movements.
Exercise 3* - Key movement: «propulsion with the legs» - Environment: In deep water	Alternating legs strokes: 15 m, torsos turning around with two lateral rotations from the ventral position to the dorsal and vice versa. During the transition from the ventral to the dorsal position the arm must end the rotation.

Exercise 4 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Swim for 25m: 5-8m in ventral position with legs strokes and traction of the alternating arms (underwater traction and aerial recovery phase) breathing on the side: then perform directly 5-8m in dorsal position, possibly with stretched arms during the aerial recovery phase; regular traction of the arms, etc.
Exercise 5: Dip* - Environment: Depth of water suitable for the child' height (1.5 m min.)	Upside down dive from the edge in a sitting, squatting or standing position, sliding towards the bottom of the pool.
<b>LEVEL 6</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key movements: «propulsion with legs and arms; co-ordinating breath »Environment: In deep water	Swim for 15 m with alternating legs strokes and alternating arms traction (possibly with visible underwater phase and aerial recovery), in ventral position, breathing correctly on the side.
Exercise 2 - Key movement: “propulsion with the arms” Environment: Water at chest or shoulder level	After pushing off from the edge: 3-5 m with the sole propulsion of the hands. The elbows are turned outwards, push off obliquely with movements inwards/ outwards of forearms and hands below the torso; the face is kept in the water, with a correct position of the head (do not use the arms, like in the breaststroke swimming, or the legs)
Exercise 3 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Perform 15-20 m in ventral position with alternating legs strokes and breaststroke style arm movements. Breathe forward and at every arm traction.
Exercise 4 - Key movement: “legs propulsion” Environment: In deep water	Body submerged vertically for 30 seconds into deep water, the arms can make small movements of support (eg paddling).
Exercise 5* - Key movement: “propulsion with the legs” - Environment: In deep water	Perform the exercise by adjusting it to the type of handicap (phobias in case of hemiparesis)
<b>LEVEL 7</b>	
<b>EXERCISES, ELEMENTS AND ENVIRONMENT</b>	<b>ELEMENTS OF THE DIDACTIC OFFER</b>
Exercise 1 - Key elements: «propulsion and sliding» - Environment: Water at shoulder level	While standing: first of all, dive under water and swim in the direction of the wall from a distance of at least 3 m, possibly turn under water (the face must remain in the water) and collect an object from the bottom located at 2 m from the wall.





Exercise 2 - Key movement: “complete movement of the body” - Environment: Water at shoulder level	Perform 4-5 butterfly stroke style movements with a visible imprinting from the head/shoulders (without jumps and with legs relaxed). The arms are stretched in front of the head or along the body.
Exercise 3 - Key movements: «propulsion with legs and arms» - Environment: In deep water	Perform the exercise by adjusting it to the type of handicap (phobias in case of hemiparesis)
Exercise 4: Water Safety Control Water knowledge and safety skills - Environment: In deep water	The three exercises must be performed in succession, without breaks: <ul style="list-style-type: none"><li>– Perform a flip forward or sideways in deep water (the head must be immersed completely under water)</li><li>– Remain still on the surface for 1 minute, pedaling vertically or making alternating leg movements. Get helped with the arms.</li><li>– Swim for 50 m</li></ul>

**\*Learning these exercises is necessary to access the next level.**

**Source: Our source Processing**

### 3. Discussion

The didactic proposal of Italian Swimming Federation, based on seven levels with related exercises and objectives to be pursued, is configured as a fundamental strategy for the teacher who teaches swimming, both for the non-disabled and for the disabled. In fact, the correct learning of the didactics provided, after a phase of adaptation to the water, allows the child to develop skills that allow him swimming by using three techniques, at least in a beginner’s way (Ambrosio et al., 2011; Barba et al., 2007; Bíró et al., 2007; Burkett, Mellifont, 2008; Wiesner, 2008).

Specifically, what is foreseen in the first two levels is dedicated to the adaptation to water, to and a first approach to what will be the key elements that will support the child’s educational path. Levels 3 and 4 enhance the key elements and introduce the basic movements of the discipline, while, with reference to the levels 5-7, the objectives are oriented towards the refinement of basic movements through various exercises useful for learning crawl, backstroke, breaststroke swimming styles, and to acquire control for safety in water.

It should be noted that the exercises in each level do not exclusively represent the content of a swimming lesson, but also the final goal to

be reached at the end of the course. Moreover, the pursuit of the research project outcomes allowed for the emergence of some relevant observations that characterize the adaptation phase of the special sports didactic offer for disabled children. The main ones, also in line with the specific literature available, are (Dingley, Pyne, Burkett, 2014; Lepore, Gayle, Stevens, 1998; Winnick, Porretta, 2016):

- If the child cannot push himself off autonomously (for example, if the body cannot be bent or tense) it is possible to perform a supporting action by pushing it off.
- If legs strokes are not possible due to paralysis and no arm thrusts are foreseen during the exercise, the child can be helped in moving in the water by gripping his arm (exercise 3 of level 4, exercises 1 and 3 of level 5).
- All the dives into the water can also be performed while seated.
- Some disabilities such as scoliosis, Down syndrome, etc. prevent making a rotation around the central axis (flip). For this reason, the exercise can be performed by proposing a lateral rotation.
- The impossibility of performing movements with the arms (due to paralysis, amputations, etc.) can be compensated by teaching specific movements of the torso.
- In the case of cerebral motor illness, shoulders blocks or serious lack of strength in the legs, the aerial recovery phase is hindered.
- Provide aid only in case of need. Do not use floating tools or swimming or diving goggles if they create an obstacle in the relationship between the child and the water environment.

Moreover, beyond the purely athletic and sports aspect, the dropout situation equal to 0 and the strong desire to continue the activity by all the children of the research sample, showed the possibility of pursuing also social benefits, in accordance with the relevant literature, such as (Bailey et al., 2009; Di Palma, Ascione, Peluso Cassese, 2017; Stan, 2012; Summer, 2017):

- Increase of self-esteem;
- Increase of autonomy;
- Social inclusion.

An interesting starting point for future research could be the real evaluation, through suitable tests such as SF-12 Standard health status questionnaire, of the increase of these social-relational components.

Furthermore, the fundamental role of human support emerges too,



introducing the need for training for these resources that goes beyond that of the swimming instructor, and which extends towards the figure of a sports educator in disability (Conatser, Block, Lepore, 2000; Di Palma, Ascione, Peluso Cassese, 2017).

## Conclusions

The experimentation we carried out allows us showing how much more important and necessary it is to structure special didactics proposals in sport, through appropriate forms of motor activity adapted in relation to the different forms of disability, so that the sports, social and psycho-physical benefits can be generated for disabled individuals (Burkett, Mellifont, 2008; Carrol, 2017; De Anna, 2007; Lepore, Gayle, Stevens, 1998 Tafuri et al. 2017). Accessibility to the sports sector also for people in disadvantaged psycho-physical situations can, in fact, be supported and promoted exclusively through a new perspective of sports activity, first of all concerned with the relevant conditions and the specific needs of the classes of subjects to whom it is addressed.

This study is the basis for carrying out future research projects both in terms of assessment of sports performance, and from the viewpoint of the assessment of the psycho-physical and social well-being state improvement of the disabled subjects benefitting from the special sports didactic proposal in swimming we have worked out.

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