



Didactics of Motor Activity in Sensory and Intellectual Disability

Didattica dell'Attività Motoria nella Disabilità Sensoriali e Intellettive

Mattia Caterina Maietta

Università Telematica "Pegaso" – mattiacaterina.maietta@unipegaso.it
<https://orcid.org/0000-0002-1003-1439>

Francesco Tafuri

Università degli Studi Niccolò Cusano – francesco.tafuri@unicusano.it
<https://orcid.org/0000-0003-4059-3122>

ABSTRACT

The purpose of this work is to propose a working suggestion for all professional, that, within the school, meet people with sensory and intellectual disabilities on a daily basis. First, the characteristics of the different disabilities are illustrated, then the adapted activities are described. Activities adapted are, by definition inclusive, promote optimal living conditions and a good system of relationships. Through sport, in fact, people with disabilities could feel part of the community and its network of relationships. Nowadays everyone can practice sports, having the opportunity to try their hand in various disciplines. Sport is an important educational tool that, through targeted actions, becomes fundamental for emancipation and growth. This work was born out of the need to help children with intellectual and sensory disabilities in everyday life, through motor activity, setting as objectives the improvement of motor skills, attention, concentration, and of the basic motor schemes, the psychic, intellectual and sensory conditions, the strengthening of relationships with others, in particular with peers, the development of self-discovery and confidence in one's own abilities and autonomy in daily activities.

Lo scopo di questo lavoro è di proporre un suggerimento di lavoro per tutte le figure professionali, che all'interno della scuola, incontrano ogni giorno persone con disabilità, sia di tipo sensoriale che di tipo intellettivo. Innanzitutto vengono illustrate le caratteristiche delle diverse disabilità, successivamente si descriveranno le attività adattate. Le attività adattate per definizione sono inclusive, promuovono condizioni di vita ottimali e un buon sistema di relazioni. Attraverso l'inclusione dello sport, infatti, le persone con disabilità possono sentirsi parte della comunità e della sua rete di relazioni. Oggi tutti possono praticare sport, avendo la possibilità di cimentarsi in varie discipline. Lo sport come importante strumento educativo che, attraverso azioni mirate, diventa uno strumento fondamentale di emancipazione e crescita. Il lavoro è nato dalla necessità di aiutare i ragazzi con disabilità intellettiva e sensoriale nella vita di tutti i giorni, attraverso l'attività motoria, ponendosi come obiettivi il miglioramento delle capacità motorie, dell'attenzione, della concentrazione, e degli schemi motori di base, delle condizioni psichiche,

intellettive e sensoriali, il rafforzamento delle relazioni con gli altri, in particolare con i coetanei, lo sviluppo della scoperta di se stessi e della fiducia nelle proprie possibilità e dell'autonomia nelle attività quotidiane.

KEYWORDS

Didactics, Sensory and Intellectual Disability, Adapted Activity
Didattica, Disabilità Sensoriali ed Intellettive, Attività Adattata

CONFLICTS OF INTEREST

The Authors declare no conflicts of interest.

1. Introduction

Physical activity produces mental strength and promotes the development of logic and intellectual abilities, the development of individual potential, the enhancement of talent, and the acquisition of skills and integration in contexts that are rich in meaningful relationships. All the above make physical activity a fundamental element in the life of people with disabilities: they give them the opportunity to find elements of success and personal development while practicing a potentially beneficial activity. In addition to improving fitness, cognitive development, and socialization, we also consider: better self-esteem and autonomy. Sports are thus important in everyday life because of their great educational and psychological value.

There are, in general, several aspects and advantages that can be associated with physical activity. The first aspect is the physiological one, which allows people to strengthen body and muscles, to increase and improve balance, enriching their overall physical aptitude. The second aspect is the psychological one, which that allows to fuel confidence, increasing self-esteem and self-image. The third and final aspect is the social one, which contributes to the achievement of autonomy and integration of disabled people in the community extended beyond their family. In the context of motor activities, the instructor/instructor of Phys Ed. is an important figure and a reference for the disabled. Although not everyone is able to work with disabled people, to become good professionals, certain personal characteristics are necessary:

- Empathy: identify with the other, think like him, appreciate his results, respect him, sharing the heritage including him in the group, that is, make them an active part of the group.
- Ability to adapt to different situations.
- Ability to instill calm in stressful situations.
- Constancy: Results can come even after a long time.
- Ability to listen.
- Statement of reasons.
- Ability to take initiative.

- Dynamism.
- Be extroverted and friendly.
- Having high self-esteem.

The instructor must also be aware of the potential of the people with whom he works, adapting best in each of the situations he faces; the strengths of people with disabilities must be stimulated, thereby increasing confidence in their abilities. The instructor must listen to the needs of people, their interests, their concerns, must pay attention to the relationships, the feelings and the different ways in which they are expressed. The instructor will use a particular teaching method depending on the participants, their personal characteristics and the context in which they operate. She will have different responsibilities depending on the method used and the type of people he finds. In general, we can say that there are two main trends: the method of government and active method.

The inductive method is generally used when everything to be communicated follows its hierarchical structure. The instructor defines the objectives and resources that will be used to perform the task; dictates the instructions while the evaluation of the results will be carried out at the end. This method is suitable for numerous and homogeneous groups. The instructor must have the ability to “demonstrate” the technical content of the exercises with adapted movements to ensure that participants can repeat them correctly. In the deductive/active method the objectives must adapt to the characteristics of the participants, facilitate participation. The work of the instructor, in this case, is to make everyone reach the skills, allowing you to go along with personal rhythms and times, thus reaching different levels of learning. It can constantly provide information to the participant, informing the group about their progress, solving problems when they arise; guiding the learning process in all its evolutionary forms.

2. Sensory/ intellectual disabilities

Talking about sensory disability does not mean describing the disabilities of all the senses: sight, hearing, taste, touch, smell, we will talk only about the impairment of sight and hearing. Through the senses we perceive the external environment, and we take information in order to be able to intervene in an adequate way, if instead some perceptions fail, people become disoriented. Sensory disability therefore means blindness, low vision, deafness, hearing loss or both senses therefore deafness.

At the institutional level, one wonders how to intervene to teach pupils with this type of disability. First, we refer to the Italian Framework Law No. 104/92 which provides for the use of appropriate strategies to ensure students enjoy their right to study with the support of specialized teachers, communication assistants. In Italy there are 877,000 people with hearing impairment, and 92,000 with pre-verbal impairment; in the rest of the World the figure is around 360 million, of which 328 million adults and 32 million under 15 years of age. (WHO, 2013).

For intellectual disability, however, according to the international system of classification of disabilities is the new way of defining mental retardation, we mean not only at a conceptual level but also as a clinical, rehabilitation, educational approach; mental retardation is part of neurological developmental disorders. It is characterized by an intellectual functioning below the average or with an IQ value that is less than 70–75 which displays limitations of social skills, personal auton-

omy, of communication, creating problems not only at a personal level but also at school and in the world of work. Given their problems of perception, memory, attention, the difficulty lies in acquiring skills and in maintaining them over time. Other neurological development disorders include attention deficit and hyperactivity syndrome, autism spectrum disorders, and learning disorders. The disorders manifest themselves since early childhood and are recognized for the difficulty in problem solving and learning, difficulty in personal autonomy. It is not possible to define the degree of disability on the basis of IQ alone, it is necessary to take into account the level of support needed, establishing whether the aid is intermittent or necessary for all activities (Sulkes, 2022).

Intellectual disabilities can be caused by several abnormalities: chromosomal abnormalities, metabolic disorders, neurological diseases; also congenital infections by viruses such as *Rubivirus rubellae*, *Cytomegalovirus*, *Toxoplasma gondii*, *Treponema pallidum*, *Herpes simplex* and *Human Immunodeficiency Virus* (HIV) (see Michelson et al. 2011). Prenatal infection with *Zika virus* causes congenital microcephaly and a severe associated intellectual disability. Exposure to drugs and toxic substances during pregnancy can also lead to intellectual disability, for example fetus-alcohol syndrome is the most frequent of these conditions. Potentially dangerous anti-epileptic drugs, chemotherapy drugs, exposure to radiation, lead and methylmercury; malnutrition also affects the development of the fetus, in fact, brain development impairment and weight loss have the same cause (Sulkes, 2022). The lower your birth weight, the greater your chances of developing an intellectual disability. Complications related to prematurity, such as bleeding of the central nervous system and peri-ventricular *Leucomalacia*, dystopian birth as a podial or high presentation, multiple pregnancy, placental problems, perinatal asphyxia may increase the risk of intellectual disability.

The main manifestations of intellectual disability are: slow acquisition of new knowledge and skills, immature behaviour, limited ability to take care of themselves; for this reason they are subject to hospitalization or psychiatric interventions. Behavioural disturbances are their reactions to the environment around them. The predisposing factors to behavioural disorders are: lack of program aimed at learning socially responsible behaviour; inconsistent regulation of the limit; recurrence of wrong behaviours; reduced communication ability and discomfort related to the simultaneous presence of physical and psychiatric problems such as depression or anxiety.

3. Methodology and Teaching of Adapted Activity

In view of the disabilities described in the previous paragraph, we must adopt flexible teaching styles: that is, individualized teaching that starts from shared or similar objectives, simplifies the learning path and enhances learning times; flexible teaching style is personalized teaching which, having similar or different objectives, reduces and differentiates learning, that is integrated teaching with common, similar or different objectives pays more attention to the integration process, Disciplines become a means to promote personality. The tool available to teachers is certainly the IEP (Individualized Educational Plan) for pupils with disabilities, as well as a systematic observation and evaluation to identify basic skills and prerequisites. The design is revised as follows:

- leaving the objective equal, accessibility is changed (audio recording of texts, use of cards for deaf pupils, use of AAC—Alternative Augmentative Communication);
- using technologies such as IWB and other software, interactive educational contexts such as cooperative learning or tutoring within laboratories, facilitating learning;
- reducing concepts, simplifying vocabulary, allowing more errors;
- proposing only the core elements of the activities;
- active participation in the task, to insert the pupil at the most significant moments for example by building a working tool.

It is considered necessary the active participation of the different subjects in the implementation of the activities, initially in fact, you can propose to the students to build the work/ game tools, using recycled materials; at the beginning of each lesson is scheduled, through circle time, the explanation of the activity that is proposed using the different tools that, depending on the disabilities we encounter, are necessary.

Both in the case of sensory and intellectual disabilities we can encounter the absence of language, there are therefore tools and methodologies of alternative communication to speech. The use of AAC, the use of the LIS (Italian Sign Language) and the “homesigns” a real strategy implemented by the boys unable to express themselves verbally.

The AAC is called “augmentative” because it is aimed at strengthening the communication of a subject, through tools that help and increase the communication potential. Therefore, if the child has a primitive verbal language (both vocal and gestural), the latter is not replaced but accompanied by other strategies to give the subject the opportunity to express and understand more effectively. It is also called “alternative” because it uses alternative tools and codes to speech that are able to replace communication through the spoken language (De Lange, 2012). Millar, Light and Schlosser (2006) have shown that the timely use of this type of intervention contributes to a positive impact on the natural development of speech. Moreover, the literature suggests that impaired cognitive skills do not preclude communication, indeed, AAC can also produce cognitive improvement, as it promotes literacy and an enhancement of social communication (Drager et al., 2010).

The AAC uses communication tables, symbols drawn on cards (PECS) that having a Velcro can be attached and detached to create a phrase; there are software to use via pc and tablet that also provide synthetic voice output; several children’s books are “translated” into AAC symbols. The positive effects obtained from the use of the AAC are therefore numerous and concern the functional communication skills, being able to reduce problematic and aggressive behaviours typical of these subjects, due to not being able to express their needs and moods. Often these attitudes are used as an outlet for frustrations, with the aim of attracting attention, or as strategies to avoid unwanted situations (Carr & Durand, 1985).

An alternative to the spoken language is definitely the marked language or the LIS; in addition to being the natural language of the Italian Deaf community, LIS is also used in educational and scholastic contexts, in which it has been shown to improve both the language and cognitive skills of children, as it supports the memorization and allows a greater activation of the areas not assigned to the language, thus increasing the brain activity of the child (Daniels, 2001, pp. 11–26). Some studies have analysed cases of communication deficits, such as verbal dys-

praxia, where LIS has proven to be useful both as a vocal language support and as a form of CAA (Bolognini & Giotto, 2016; Sabbadini & Michelazzo, 2016). Other studies have shown the advantages of LIS for other language deficits, both with cognitive and behavioural impairments (Rinaldi et.al., 2016) and in the absence of them (Scursatone & Bertolone, 2016). Finally, it has proved to be suitable also for other situations and clinical pictures, such as those of congenital or acquired aphasia (Scurria, 2012), of cognitive retardation (Fiengo, 2014) and of subjects with Down syndrome (Raccanello, 2014).

Certainly, compared to the use of the AAC, LIS is more immediate, the disadvantage occurs if in disability there are limitations to fine motor skills, this would entail the impossibility of “marking” correctly. We have mentioned the “homesigns” or the set of gestures that children invent and use to communicate having no valid alternatives. It often happens that this system of communication is used by deaf children, raised in hearing families and isolated from the deaf community. Homesigns are now considered linguistic phenomena with characteristics similar to sign language and spoken language.

3.1 Adapted Activities

Some examples of practice: for the equipment are used balls of different sizes and weights, for the setting, I reduce the operating areas; the task is defined in a few simple motor actions; The regulations are more flexible, for example in volleyball, the ability to hold the ball before re-raising it. It starts at each lesson, with a general activation with running and exercises of mobilization of the great joints.

Examples of activity:

In the first lesson volleyball passes are proposed with top and bottom pitches with or without rebound and rolling the ball on the ground. You can do stages/ rebounds with the ball (with 2 hands and one hand) and passes the ball against the wall by shooting it with and without rebound. The work is done in pairs with throwing and shooting with 2 hands with balls of different sizes and weights and then with one hand. Next, we propose: stages/ rebounds with the ball against the wall and shooting with and without rebound. We can use the ball with the rattle and in pairs play direct passes with throwing from above or from below; throw with rebound; throw back and catch on the fly. Structure a path (single not teams): slalom running between 3 pins, collecting the ball on the ground and from that position try to knock down a pin placed at the bottom of the gym, then you have to go back running and give the 5 to the partner for the change. At a later time, we activate an equal path but the slalom is performed dribbling (even 2 or 3 stages from stops and then race) with the baskets even teams with volleyball. We make the students work in pairs by asking for direct passes with launch from above or from below; the game takes place in pairs accompanying the disabled student with an able-bodied pupil. Throw with rebound, throw back and catch on the fly. Structure a path (single not teams): slalom running between 3 pins, making collect the ball on the ground (volleyball) and from that station try to knock down a pin placed at the bottom of the gym, then go back running and give the 5 to the partner for the change. The stages and the shooting to the basket, single and teams, using different types of basket, is a valid inclusive game as can be the game of bowling.

Sports activities adapted for disabled people have a common part in general sports activities and a specific part instead is directly geared to impairments and

autonomy of movement. Sports activities have an educational value in terms of disability in terms of disability, social class, age in any condition. «Sport, starting from what a person can do or give, stimulates the consideration of himself and his existence» (De Anna, 2005). It is necessary to find a different culture of movement and sport that is inclusive of the different characteristics and modes of functioning of all people (Raiola, 2015): disabled, elderly, youth and for inclusion and mental health (Raiola et al., 2014; Raiola et al., 2015; Raiola et al., 2016).

Rethinking sports activities could be considered a recovery that strengthens educational aims, bringing out social and cultural aspects (Selis & Stocchino, 2006). Rotating games, for example, give everyone the opportunity to take turns playing the different roles of the game, that is, they ask participants to literally get into the shoes of their teammates, so that everyone can empathise with the experience of others. In this, they differ greatly from the rigidity of institutionalized sport, in which it is difficult to change role.

Finally, the paradoxical game, which is completely absent at institutional level, is particularly interesting for our investigation. It is defined as «a sports game whose rules determine motor interactions charged with ambiguity and ambivalence, which provoke contradictory and irrational effects» (Parlebas, 1997/1999, p. 82). Its fundamental characteristic is precisely in creating ambivalent relationships between players, that is, alliances and oppositions that can be changed within a very short time within the same game. Since such practice is inadmissible in institutionalized sport, this activity is substantially unknown to most people, despite the remarkable educational qualities (Bortolotti, 2013).

Sport has the potential to be an important tool when starting new processes of integration and inclusion. In fact, the intrinsic values of sport emphasize the need to want to excel, cooperate, respect the rules and laws of the community, its role as a support for a policy of health and hygiene and, above all, the cohesive function with respect to the ethnic, religious and social diversities, constituting a vital contribution to the set-up of modern nations (Besozzi, 2005; Cesareo, 2000; Granata, 2012). Within the didactics that want to be inclusive we must surely insert the didactics through the ICT, the computer technologies for the communication.

The regulatory prospectus was derived from the eight key competences of 2006, elaborated according to the recommendations of the European Parliament. Thanks to the *Lisbon Strategy* of 2000, which concerned European Union's actions in the fields of scientific research, education, training, and digitization, eight key competences for lifelong learning were drawn up in 2006. According to these recommendations, the eight key competences essential for lifelong learning are: «communicate in a native language[,] communicate in a foreign language[,] mathematical and technological science competence[,] learning to learn skills[,] social and civil competence[,] initiative and entrepreneurship awareness and culture[,] digital competence» (???). The latter is defined as «the competence of those who know how to use new technologies with the purpose of education, training and work. As an example, they are part of this competence: computer literacy, online security, the creation of digital content» (European Union, 2018). Accordingly, the teacher must be able to design activities with ICT, structure new teaching paths with the use of ICT, create educational content always with the use of information and knowledge technologies.

It is however true that, as pointed out by Villabla et al. (2017), teachers – and in particular those of physical education – are not always accustomed to the use and integration of TICs in teaching processes. If we take, for example, the IWB interactive whiteboard multimedia, we know that the teacher of Phys Ed. is provided with

Learning Objects with which to motivate his students; these objects can especially engage students with deafness – e.g., through images – and students with intellectual disabilities, who are most attracted to this type of support in receiving classroom explanations. To transmit knowledge learning objects must be contextualized, and the student must be able to apply it to real life. Another example of the proposed activities, are adapted sports, which involve teams, such as Goalball and Sitting Volleyball.

Goalball. Goalball¹ was born in 1946 as a rehabilitation for blind veterans returned from World War II. In 1976, it was presented to the world at the Toronto Paralympic Games. This sport is exclusively for athletes with visual disabilities and therefore is an example of integration to achieve an equal right on the competitive spirit. It consists of two times of 12 minutes each and the athletes wear blackout masks on a playing field. The aim of the game is to roll the ball into the opposite gate while opposing players try to block the ball with their bodies. The bells inside the balls help to orient the players, indicating the direction of the incoming ball. Therefore, while the game is in progress, you need complete silence in the venue to allow players to react instantly to the ball. The playing field consists of a rectangle of 18 meters long and 9 meters wide; Behind each team is a door, similar to that of football, that covers the entire width of the field and 1.30 m high. Inside each area, Tactile signals are placed that help athletes to orient themselves on the field. The ball weighs 1250 g, has eight holes, two rattles inside and has a circumference of 75.5 to 78.5 cm.

Sitting Volleyball. Furthermore, the Sitting Volleyball was presented to the world at the Paralympics of Arnhem 1980 Games. It requires a smaller court (10 m x 6 m) and a lower net, and the game is considerably faster than standing volleyball. It is also proposed in five sets, and the first team to reach 25 points (with at least 2 points) wins the game. Also, this sport is exclusively for athletes with visual impairment and therefore is an example for integration:

«Teams consist of mixed classes in male and female events, with six on the court at a time. At all times, an athletes' pelvis must be touching the ground, and service blocks are allowed. At the London 2012 Games, 198 athletes competed in the sport» (International Paralympic Committee, 2022b).

Torbball. Torbball, another team game that unlike Goalball is not part of the Olympic Games: the tool used is always a ball with inside the rattles, the field is divided into 2 meters by cords equipped with bells, is 16 meters long and 7m wide. The door is wide as the field and is 1.30 meters high. The players have a blindfold so that the visually impaired have their sight totally obscured; the aim of the game is to score a goal by pulling the ball with your hands and passing the ball under the strings without touching them. If you touch the rope, you foul and after three fouls you assign a penalty. Matches last 10 minutes. In Italy there is a male and a female championship. The adapted Cricket can also be played at school using a sound ball larger than the normal size. In general, for the blind, we use sound tools or balls with rattles inside, together with the teacher or a mate who acts as a guide and participates the movement, guides the path through his voice, and orients the student with disabilities.

Stoke Mandeville Games. If it is necessary for physical and sensory disabilities

1 These sections on Goalball and Sitting Volleyball is adapted from the International Paralympic Committee's (2022a; 2022b) descriptions.

to use technological tools, it is customary for intellectual disabilities to amend the regulation by making it more accessible. If we talk about mild disability, it is possible that the pupil is perfectly able to compete with the able-bodied. Ludwig Guttman, a German neurologist and sports manager, promoted physical sports activities for people with disabilities and for the organization of the sports movement. Since 1952 he has organized the so-called “Stoke Mandeville Games”, which have grown over time to have over 130 foreign participants. He decided in the field of his mansion to:

- Promote sport from the very beginning as the main therapy;
- Use sport as shaping and reshaping his patients with a strong physique and self-respect.

Ludwig Guttman himself together with Antonio Maglio (an Italian M.D.) brought the games to Rome in 1960, later recognized as Paralympic games (Fonzo,2021). An event that is still held with great success. Since 19 June 2001 the Games are now systematically combined with the actual Olympic Games. There has been an agreement signed between the International Olympic Committee (IOC) and the International Paralympic Committee (IPC) which guarantees that the candidate city to host the Olympics should organize both Olympics and Paralympics.

4. Conclusions

Motor and sports activities allow gaining more knowledge and awareness of one’s own skills, by supporting autonomy. Through the movement of our own body, our mind and all the elements connected to it, it is possible to gain great benefits; the connection and the bond we can establish with our body and our movements allow us realizing the actions that bond lead us to discover new possibilities, potentialities and skills. Sport really seems to represent an opportunity through which to explore and recognize the potentialities of one’s own body and its movement, a review of one’s own body scheme, which translates into a real opportunity to develop new skills, especially in particular compromised areas, through a path of discovery, knowledge and awareness.

The choice of group activities, instead of individual activities, allows the children to socialize, to be strong with each other and to help each other. Teamwork is also much more effective, although it is difficult to choose and adapt the exercises so that everyone can do them, effectively and also by including the playful part. Group games, unlike individual activities, allow you to experience the competition in a more relaxed way. Through the adapted activities it is possible to establish relationships of esteem and trust overcoming the so-called “blind relationship” or the closure towards the able-bodied. Being able to move in space without fear helps to overcome the “spatial blindness” and furthermore, the above activities improve the “psychological blindness” or the distrust and discouragement that otherwise lead to isolation. We cannot undo the disability but certainly we can achieve a psychologically positive attitude towards ourselves, others and the problems of life.

Schools should therefore be open to activities with new and better tailored structures. Allowing institutions such as the school to work on the Life Skills of pupils with a view to a more manageable future life means not having to relegate

people with disabilities in institutionalized environments where we find overcrowding. Lack of dedicated staff and lack of occupational therapy programs contributes both to worsening the condition of behavioural challenges and to limiting functional advances. Avoiding long-term hospitalization in large areas of care is extremely important to maximize the success of the individual. Suitable environments are the school, sports associations, meeting points, families but suitably supported and prepared.

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