

Original Article

# Down Syndrome, Characteristics, Diagnosis, Education, and the Role of the Family

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**Abstract** - Down syndrome is a genetic disorder characterized by a variety of mental and physical problems that slow developmental stages in all regions. In this work, we develop the clinical profile with the common characteristics of children with Down syndrome, as well as the process of diagnosing the syndrome. Then become a reference in the development and progress inhibitory factors from newborn to adulthood. It also presents the aims and the teaching principles in the education of children with the syndrome, with particular emphasis on language education and educational interventions that can facilitate their effective inclusion in the ordinary school. Finally, this paper discusses issues related to the families of children with Down syndrome, the first contact of the family with the syndrome, the feelings experienced by parents, and the role of special education practitioners in cooperation with families.

**Keywords** - Down syndrome, Trisomy 21, Diagnosis, Clinical profile, Education, Family

## I. INTRODUCTION

Down syndrome is a global phenomenon, with a prevalence of about 1: 800, birth of live babies (Capone, 2001, Stasinou, 2013). It is a medical problem that you are surrounded by social, psychological, and educational dimensions. Many times our own society creates problems with enormous psychological effects on both the child with the syndrome and the family environment itself.

Proper education of the family environment and the attitude of the society in which the child lives are regulatory factors for the degree of development of the mental and behavioral development of children with Down syndrome. In recent years, the prejudices and stereotypes about the treatment of children have changed and there is a gradual shift towards educational intervention and their social inclusion (Stasinou, 2013). It is important that we prioritize the education of a child with a syndrome to know its learning peculiarities and to take them into account in the choice of both the learning objects and the teaching method we will use (Polychronopoulou, 2001).

There are great differences in the physical, mental, and psychological characteristics of children with

Down syndrome and many common silk features that affect their education and should be known to those who deal with it. All children can be educated and maximize their abilities. Many researchers have shown that consistently, patiently, lovingly, and educating these children can develop their skills and develop functionally.

## II. DOWN SYNDROME

### A. Definition

Down syndrome or else Trisomy 21 or Trisomy G is the description of an abnormality that encompasses a set of characteristics that are present in the carriers of this genetic defect and are related to deviations in physical development, mental development, and psychosocial development (Shapiro, 2004). It was named after the Englishman John Langdon Down, who in 1866 was the first to describe it. It is a genetic condition resulting from the appearance of an extra chromosome in the 21st pair. It is also called "Mongolism" because of the features of the face and the shape of the eyes that closely resemble the characteristics of the Mongolian race.

The exact causes of Down syndrome are currently unknown. The syndrome is associated with developmental delays and mild to moderate learning difficulties. Many children with Down syndrome also have abnormalities in the heart, early onset of Alzheimer's disease, leukemia, and other health issues. They may also have intense dental-jaw problems, toes or hands attached to a membrane, and clumsiness of thin or thin manipulations (Haye, Batshaw, 1993). Life expectancy for children with Down syndrome has increased very much in recent years as health care and social inclusions have improved.

### B. Historical review

Down syndrome occurs in all parts of the world and is not restricted to any race, social class, or historical period. In 1838, Esquirol gave the first description of a child who might have had Down syndrome. J. Langdon H. Down, in 1866, made the first detailed record and systematic description of Down syndrome. In 1959, Jérôme Lejeune describes Down's syndrome based on the chromosomal abnormality and demonstrates that Down syndrome is a chromosomal abnormality as well as that the



onset of the Syndrome is the result of an additional chromosome, increasing the final number of chromosomes to 47 instead of 46 are present in the cell. Since March 2006, World Down Syndrome Association and the European Down Syndrome Association have been established as World Down Day Syndrome on March 21st, at the initiative of Greek physician Stylianos Antonarakis, Genetics Professor at Geneva University, in order to inform and raise awareness of the international community for Down syndrome. In fact, March 21st was chosen as the date composing the syndrome (3rd chromosome in the 21st pair). (Wikipedia).

**C. The appearance of Down syndrome**

The hereditary transfer of the various human properties is done with the chromosomes found in the nucleus of each cell. Each offspring carries its own chromosomes that are transferred from the mother's and father's germ cells. Down syndrome incidence is estimated to be around 1 per 700 births, although statistically more common in older people due to the presence of mutations in reproductive cells (Cote, Katsantonis, 1980). The three forms of the syndrome are as follows (Haye., Batshaw, 1993):

**a) Trisomy 21**

The majority of Down syndrome children, approximately 90-95%, have this type of syndrome, and this is due to the excess chromosome that occurs in the 21st pair. Anomalous cell division occurs in the egg in 95% of cases and in the sperm in 5% of cases, before or after capture. This type of syndrome is not genetically inherited. This group has a wide range of skills from children who are half-dependent and can work. There are also physical problems such as heart, pneumology, speech, and hearing difficulties.

**b) Transfer**

An additional piece of the 21st chromosome binds or shifts to another chromosome. Appears in 2% of Down syndrome babies this form is hereditary. 5% of this small number happens at random. This is inherited from a parent who is a healthy carrier that is, carrying cells in which a strand of chromosome 21 is attached to another chromosome, but without quantitatively altering the genetic material. This is why the carrier parent does not manifest the disease and such a translocation is called a balanced translocation. This syndrome is called Down's syndrome or partial trisomy 21.

**C) Mosaicism**

About 1-2% of people with Down syndrome have the type of mosaicism. This type results from the abnormal cell division of only some cells, while the rest is normally divided. As the embryo grows and the normal and abnormal copy of the cell grows Even if half of the cells are normal, the symptoms are

usually almost the same as those occurring with other types of the syndrome. However, children with mosaicism exhibit lighter features, fewer health problems, and higher intelligence than children with trisomy 21. There seems to be some relationship between the percentage of normal cells and the degree of intelligence. The smaller the number of cells that have been affected, the higher the index of intelligence (Polychronopoulou, 2001)

**D. Down syndrome the role and the age of mother and father**

With the increase in the age of the woman, the frequency of Down syndrome also increases. The probability that a woman under 30 who is pregnant will have a baby with Down syndrome is less than 1 in 1000, but the chance of having a child with Down syndrome increases in 1 in 400 women who are pregnant at the age of 35. The probability of Down syndrome continues to increase as the woman grows so that at the age of 42, the probability is 1 in 60 that the pregnant will have a baby with Down syndrome and from age 49, the probability is 1 to 12. (<http://www.medicinenet.com>)

Age of Mother	Possibilities of Down Syndrome	
	In 12 Weeks	In Birth
20 years	1/1068	1/1527
25 years	1/946	1/895
30 years	1/626	1/659
32 years	1/461	1/659
34 years	1/312	1/446
35 years	1/249	1/356
36 years	1/196	1/280
38 years	1/117	1/167
40 years	1/68	1/97
42 years	1/38	1/55
44 years	1/21	1/30

However, it should be noted that 80% of children born with Down Syndrome have mothers under 35 years of age. This does not alter the maternal age factor but is explained by the fact that women under 35 have higher childbearing rates than older women (Selikowitz, 2006). As a result, Down syndrome is associated with maternal age and is not controversial, so it is called Syndrome because it is characterized by a variety of physical and mental problems that make up a clinical picture typical of the particular problem so that it is recognized (Polychronopoulou, 2001).

The most important factor leading to chromosomal abnormalities is clearly the age of the mother during pregnancy, in addition, the role of the father's age is not so clear. There are various surveys around the world where their results point to the opposite. Scientists argue that a father's age plays a role but is of little importance that it does not need to be counted as a factor.

### III. DIAGNOSIS PROCEDURE

#### A. Prenatal control for Down syndrome

The purpose of the prenatal check is the early diagnosis of certain fetal diseases and to provide as much information to the parents as possible about the existence of a disease, its prognosis, and possible effects on the fetus. The diagnosis of the possible existence of Down's syndrome is possible on the basis of a combination of specific ultrasounds and laboratory measurements, and even from the early stages of pregnancy (Behraman, 2000). Prenatal control is distinguished by the direct (invasive), that is, you apply it directly to the fetus, and indirect (non-invasive) that is, you apply to the mother, so implicitly the conclusions about fetal health come from it.

More specifically, the methods used during prenatal testing are as follows:

- Mother's blood test between the 10th and 18th week of pregnancy. Ultrasound transcript ultrasound between 11th and 13th week where the amount of fluid underneath the fetal neck is measured.
- Mercury villus sampling is performed from the 11th to 14th week of pregnancy where a small tissue sample is obtained from the placenta.
- Amniocentesis from the 16th week of pregnancy where a needle is inserted into the uterus and a sample of the amniotic fluid surrounding the baby is taken (Morris, Alberman, 2005).
- Taking a trophoblastic tissue is an intermediate tissue from which the placenta is formed by ammonia and dermis and is of fetal origin, with the result that its cytogenetic and biochemical analysis is very helpful in the diagnosis of fatal diseases.
- Fetal liver and kidney biopsy is a relatively simple diagnostic test and is performed under ultrasound guidance.

These interventions present a small risk of miscarriage with safer amniocentesis, where elimination can occur in 0.5% of cases.

### IV. DOWN SYNDROME FEATURES

First, John Langdon Down in 1866, in the introduction of his work on Down's original paper, in London Hospital Reports, makes the first description of the physical characteristics of these people. In particular, it states that by placing people with "mongolism" side by side, it is difficult to believe that they are not children of the same parents.

#### B. General features

Children with Down syndrome are affected by their genetic material. In every living organism, the function and appearance, and the way it works are determined by the genes. Children have many characteristics with parents as they inherit genes from both of them, but due to the additional 21 chromosomes, they have physical characteristics that make them different from parents, siblings, or other children who do not have the chromosomal anomaly. Often Down's syndrome is associated with problems in cognitive ability and physical development, as well as with certain physical characteristics (Behraman, 2000).

Genetic characteristics are as follows:

- Typical eye image and eyelid aspect
- Low stature
- Unusually small chin
- Unusually round face
- Small eyes and nose
- Short and wide hands
- Bad muscle tone
- Inability to control the language and micro-linguality
- An additional skin patch on the neck
- Close fingers and a transverse palm veil instead of two

Also, most people have visual or hearing problems. Visual problems can include myopia, hyperopia, and strabismus as well as closed tear ducts. About 40% to 60% of Down Syndrome babies will have some form of hearing loss.

#### C. Pathological features

There are some physical features that are distinct for Down's syndrome, but they also constitute pathological conditions. Children are born with less weight than the rest of the children and they acquire the required weight in the second to third year of their life, which eventually reaches the normal weight for their age. From then on, and later on, during adolescence, these children become overweight or obese, with a new health problem presented (Gunn, 1997). There is an obsession with initial reflexes and generalized muscle hypotonia. The hypotonia and the extensive flexibility presented with Down's syndrome infants improves (Gunn, 1997). Hypothyroidism often occurs in infants and children and more often in adults. Congenital heart problems refer to 1/3 of children born with Down syndrome. Skeletal problems can also occur in many parts of the body. Children with Down syndrome are well below the average height for their age. The leg bones are shorter than normal as well as those of the hands and fingers. These body proportions can cause effects on strength, attitude, movement, and handling.

#### D. Mental and social characteristics

Children with Down syndrome have mental retardation that they experience in varying degrees. Their social and mental characteristics are as follows:

- limited visual perception
- Expression capacity of usually lower level
- Difficulties in understanding concepts
- abstract thinking
- inclination to rhythm and music
- social personality
- Pleasant and friendly behavior towards others
- sense of humor

The above characteristics vary according to the children. In others, they are more prominent and stronger than others. Note also that some of the above features also show changes in the downtime of the Down syndrome child. Very important are the social and spiritual skills of children who are maximized when they grow up and grow up in a family environment that supports and appreciates them.

## **V. DEVELOPMENT AND PROGRESS FACTORS**

### ***A. From infant to adulthood***

The foundations of the development of skills and humanity lie in its genetic material, as well as its environment. This development takes place throughout the life of the individual and is the result of a complex of interacting biological, psychological, cultural, and environmental factors. The consequence of the interaction of all these factors is that each individual develops in his own unique way. (McConaughy, Quinn, 1995).

### ***B. Infant age***

Infants with Down syndrome have many features such as small eyes and small ears, a small and flat nose, a small mouth with a somewhat larger tongue. All infants have low muscle tone or weak muscles, showing muscle weakness and limited as missing crying. Because of his muscular weakness, the child has difficulty in breastfeeding, and is difficult to learn to roll, get up, sit and even learn to speak. Hypotonia cannot be cured but generally improved over the years and treated with physiotherapy (Stay, Gunderson, 1995). About 50% of all Down syndrome babies are born with heart problems. Problems in the heart can even become life-threatening. Also, about 10% of Down syndrome have gastrointestinal abnormalities corrected by surgery or thyroid problems, so drugs are taken. Very rarely, 1% of all infants may develop leukemia (Stay, Gunderson, 1995). During the first month, the infant is entirely dependent on his parents. His needs can only be met with food and a sense of security and protection. This is the beginning of the commitment and the first stages of the bonding between the child and his / her parents, a process that is not limited only to this period, but it is going to continue throughout the pre-school and pre-school age (Selikowitz, 2006 ).

### ***C. Childhood***

This stage covers the period from the age of 5 until the transition to puberty. Preschool age is the period when Down Syndrome develops the feeling that he has grown up and wants to be able to manage himself. The ability to cope with his / her interdisciplinary duties leads to his / her self-confidence so this has a positive impact on the development of his / her social skills with his / her social environment (Buckley, Sacks, 1987).

At this age children have the following characteristics:

- Low stature
- Hypotension
- Inability to control the language and macro-language
- Hyperactivity
- Autistic behavior
- Depression points

### ***D. Adolescence and Adulthood***

Adolescence marks the end of childhood and the beginning of adulthood. In most Down syndrome adolescents, physical changes that occur with puberty occur in the same period as the rest of their peers. However, the onset of physical, mental, and emotional changes that occur in Down syndrome adolescents is far more painful to deal with as the child is immature in mind and does not have the same experiences as his peers. Adolescents and adults who experience Down Syndrome, in addition to the above features, also have the following (Morris, 2005):

- Mental delays from heavy (IQ: 20-35) to light (IQ: 50-75)
- Pulmonary Hypertension
- Congenital heart damage
- Low stature and tendency for obesity
- Digestive tract damage, ventricular atresia, or duodenal narrowing
- Endocrinopathies such as hypothyroidism or diabetes mellitus
- Lung susceptible to infections
- Ophthalmological problems: glaucoma, cataracts, strabismus strabismus
- Increased frequency of episodes of sleep apnea
- Ocular problems: problems with affecting acoustic acidity and middle ear vulnerability
- Musculoskeletal problems: instability of Atlantic or Atlantic-axial articulation
- The aging process appears to be accelerated and the average life expectancy is approaching just 35 years
- Men with Down syndrome are infertile, while women have a 50% chance of having a baby who will also bring the syndrome

### ***E. Kinetic development***

Children with Down syndrome encounter difficulties in both coarse and thin mobility skills as well as in writing.

### ***F. Strong mobility***

Cruel mobility is the ability of children to perform activities that involve large muscle groups. Such activities are walking, swimming, running, bouncing and throwing objects, etc. The general muscular hypotonia featuring Down's children is that they have difficulty in all these activities. The lower than normal height and the proximal bones of the legs, hands, and fingers are thought to affect the force, attitude, movement, and manipulation of objects (Tzouridou, 1995). Some children may have difficulties in walking coordination and cycling. These difficulties can cause problems for children in team games but we should not discourage them from participating. Toys can help improve muscle tone and fitness.

### ***G. Thin mobility***

Thin mobility involves the movement of small muscle groups that work in concert to perform difficult and subtle tasks. The Down kid has difficulty performing fine manual tasks such as pinching the pencil, joining pieces of a puzzle with the scissors, and clipping its buttons. This is due to the small size of the fingers and the loose muscular tone of the hands. Many times there is a lack of eye-to-hand coordination. From the difficulty in thin mobility, the reason is also affected as the muscles of the head (such as the tongue, the lips, the face) are loose and make it difficult to articulate certain sounds (Burns, Gunn, 1993).

### ***H. Writing skills***

The ability of writing affects children with Down's syndrome from neuromuscular characteristics. These features are the lack of stability of the torso and grip and hypotonia. Other factors that make it difficult to acquire writing skills in these children are:

- Lack of hand-eye coordination.
- Hyperactivity of ligaments and gait weakness is considered to be responsible for the difficulty in capturing the pencil.
- The delay in language development

Many children find it difficult to decide which hand to use and often end up on the left. They have difficulty keeping the paper or notebook with one hand and the other writing. The pressure on their hands is relaxed. Sometimes they make very big moves with the whole hand and sometimes very small moves only with the fingers. Difficult to maintain margins and lines. They find it difficult to recognize where they will begin to write and find the position of the letters and the words and their dimensions (Darais, 2002).

### ***I. Cognitive development***

Children with Down syndrome have mental retardation and learning problems. The degree of mental retardation in children with Down syndrome, as derived from IU elevators, ranges from mild ( $\Delta N$ : 50-70) and moderate ( $\Delta N$ : 35-50) to severe ( $\Delta N$ : 20-

35), with the first two groups being the most educated and workable cases in terms of acquiring academic and socio-adaptive skills (Stasinis, 2013). Their difficulties are mainly found in speaking and performing simple numerical acts (Cote, Katsantonis, 1980). They show mental retardation, which makes its manifestation manifest since it imparts an insufficient functionality that is inappropriate for the biological age of the individuals in that group (Stasinis, 2013). Mental retardation is mainly perceived in two dimensions, that of the mind and that of the adaptive behavior (Polychronopoulos, 2001, Stasinis, 2013). Thus, children with Down syndrome tend to have deficient cognitive abilities and psychosocial adaptation difficulties, deleting a slower and more limited evolutionary course than the dominant group of their peers (Chapman, Hesketh, Kistler, 2002, Stasinis, 2013).

### ***J. Language development***

Children with Down's syndrome have a small oral cavity, the nasal passages are smaller and the hard palate (palate) is small. Often the tongue is larger, so the child can not hold it in and affect the breathing and the joint leading to speech problems.

Therefore, the linguistic delay is caused by a combination of factors, some of which are physical (physical) and some are more due to perceptual and cognitive problems. Any delay in learning to understand and use the language is likely to lead to a cognitive delay. In children with Down syndrome, understanding skills are greater than expression skills. This means that their ability to understand language is usually much more advanced than expressive.

There are two points of view on the subject of Down's children. The first view claims that their reason goes through the same stages as normal children, simply with a longer delay and without finishing it (McCune, 1989). The other view is that the reason for children with Down is different and therefore not comparable (Rondal, 1999). Generally, their vocabulary is not enriched and you find it very difficult to learn the rules of grammar. There is also a difficulty in understanding and retaining many guidelines together and they can forget them after a short period of time. It is very important to give children opportunities to communicate with peers and adults. Participating in games involving sequence switching and sharing-cooperation encourages children to use polite words and adopt social ways (Darais, 2002).

### ***K. Reading ability***

The linguistic development of a child with Down syndrome is directly related to reading that helps improve language skills. Using the Global Approach is a key factor in teaching reading to a child with the syndrome as children create a visual vocabulary of familiar and comprehensible words.

The difficulties encountered in reading and more specifically in the use of phonemes for word decoding are created because the exact hearing and the distinction of sounds are involved. By 1979, there was the view that children with Down syndrome could not get the reading skills and little research had been done about the causes of this difficulty.

This view was based on the correlation of reading skills and, more generally, the ability to educate with the results of intelligence tests and the categorization of children in exercisable or educated according to their IQ. Following the integration of pupils into the general school, it was shown that their intelligence index was not directly related to their ability to read (Darais, 2002).

#### **L. Mathematics**

In this area, children with Down syndrome have the most difficulty. Late and incomplete linguistic development is one of the reasons for this difficulty. A language is an indispensable tool for thinking, comparing, and manipulating objects and activities as well as linking them to a numerical system. This makes it difficult for children to perform these cognitive functions as well as to follow the instructions and explanations of their teacher. Also, limited short-term memory is another important cause of the difficulties encountered by children with Down in arithmetic.

These children are stuck at the stage of this thought and are unable to go into the stage of abstract-symbolic thought (Tzouridou, 1995).

Some researchers interpreted the difficulties that Down's syndrome faced as a symptom of their difficulty in applying or understanding the principles of the measurement. They argued that these difficulties are common to the language difficulties of children, ie they are due to the supremacy of a symbolic system (Varvogli, 2005).

#### **M. Writing**

Writing requires additional physical and motor skills that automatically make it an educational target more complex and laborious to achieve. The skill of writing in children with Down syndrome has particularities.

Several children find it difficult to choose which hand they will write. They have difficulty keeping the paper or notebook with one hand and the other writing. Sometimes they make very big moves with the whole hand and some others make small moves only with the fingers.

They have difficulty writing between the prescribed margins and the beginning of the writing. Moreover, they have difficulty with the position and the dimensions between letters and words (Darais, 2002).

#### **N. Memory**

An important inhibitory to the learning ability of Down's children are their limited short-term memory. The storage capacity of the short-term memory of every normal human being is limited by the "magical number"  $7 \pm 2$ . This means that it is possible to store 5-9 pieces of information of some importance at a time. This ability to hold information in Down's people is very limited since the average memory capacity is 3 segments of information. It has also been found that, opposed to acoustic memory, visual memory is effective for these individuals, which should be taken into account when choosing how the information is presented to these students (Darais, 2002).

#### **O. Behavioral profile**

Children with Down syndrome are generally cheerful and can be successfully trained in self-service and social skills. Characteristic is the cognitive avoidance they present when they are going to get involved in difficult learning situations by inventing tricks such as drawing the speaker's attention by continually smiling, applauding, or jumping at inappropriate moments of education. The speech problems make it difficult to communicate within the group and often avoid their peers. While successfully participating in games, they have difficulty in dealing with real-life activities (Tzouridou, 1995). Children with Down syndrome exhibit symptoms of non-concentration and disruptive behavior due to their evolutionary immaturity. Sometimes they may be overwhelming, irritable, or affectionate. Changing school programs or classes may have difficulties while their social skills have not developed sufficiently (Darais, 2002). Children with Down syndrome in relation to their peers are emotionally and socially immature, with the result that:

- they need encouragement to take responsibility
- use refusal without even thinking
- people like to imitate for this they can greatly benefit from joining a class of the primary school
- They are not easily independent
- they are affectionate and anxious
- have difficulty familiarizing themselves with programs

All children have annoying and irritating habits, behave badly, are not obedient or distracted easily. Children with Down syndrome are not different (Solomon 1991).

## **VI. EDUCATION**

### **A. The education of children with Down Syndrome**

Children with Down syndrome have difficulty collecting information through which they can not classify them by group (categorization). They store the information they get naughtly and their memory capacity is partial and not universal. Another important parameter that plays a direct role in how children learn is related to the brain.

It was found that most children use the right hemisphere for speech-language-speech functions, compared to the majority of most people who use the left brain hemisphere for the same functions. This practically means that people with Down syndrome understand more than they can express and are capable of understanding individual words and small telegraphic sentences (Darais, 2002). Rules of conduct should be enacted, ignoring - in a logical context - any undesirable behavior and rewarding the desired (Salvaras, 2013). Children have specific difficulties in language, speech, memory, as well as rough and subtle mobility. They learn better when their information is presented visually if they have a perceptual profile that differs from that of the other children. The lesson must be very well organized in a pleasant way so that the student learns to play. A prerequisite for ensuring the child's interest in the whole process of the lesson is the ability to learn to understand. Particular attention should be paid to the organization and management of the class that will be accommodated by the student with Down syndrome. The pupil should be placed close to the teacher, away from external distractions, to facilitate his / her interaction with the teacher and to enhance his / her concentration of attention (Karvounis, 2007, Salvaras, 2013, Stasinis, 2013). Also important is the intervention aimed at learning and managing social interaction, recognition of emotions and intentions of others (Tsakalis, 2008). Interventions such as role roles (the choice of a class assistant with desired behavior to be imitated, as well as the attitudes of teachers) can contribute in this direction (Salvaras, 2013). At the same time, classroom management should be taken care of in order to develop a good pedagogical climate with optimal interpersonal relationships among all participants in the classroom (Salvaras, 2013, Saban, 2008). Necessary elements are the recognition and praise of all success and progress as well as the painless overcoming of any failure. Teaching should be done at regular and constant intervals, even for a short period of time. The exercises and tasks must be programmed to ensure the student's success and at the same time, he must be praised with the emphasis on every correct answer of the child. The evaluation and frequently asked questions indicate the inability of some teachers to teach or develop pedagogical dialogues with students. The education aims to make the child learn, look for ways and means that serve this purpose, develop strategies to solve problems, and enrich his experience (Darais, 2002). These specific needs and weaknesses require adaptation of teaching methods, as well as speech therapy, ergotherapy, and physiotherapy. Therefore, the most ideal for these children is their particular needs to adapt to the general school (Bird, 2001). We do not have the opportunity to know the degree of development of the child's mental and behavioral development with Down as it depends on both the right education and

the family environment as well as the attitude of the society in which the child lives. Children in the appropriate school context, which in most cases is the general school, and with appropriate support, 80-90% of children can be successfully trained in basic schooling, self-service, and social skills. In Greece, the education of the Down syndrome child has gone through many processes both of children and their families. Law 3699 / 2-10-2008 of Special Education now enables students with Down syndrome to study according to their functionality and age in the following structures:

- Kindergarten, Elementary School of Alumni Education, High Schools, Lyceums, TEE, Tertiary Education
- Integration and Integration Departments operating in A / B and B
- SEMAE (Schools for Special Education and Training)

In recent years in education, in our country, special attention is paid to Special Education through funded European programs.

Choosing an educational framework leads to an Individual Training Program (ADP) since individual motivation should be taken into account in every aspect of providing learning to children with Down syndrome, as with all children. Adapting matter to the child's abilities when presenting any program aims to expand these abilities. The individual training program includes the following areas:

- Communication
- Socialization
- Self-service
- Entertainment
- Exercises of general and fine skills
- Academic knowledge
- Vocational training

### ***B. Education of motion in children with Down syndrome***

Children with Down syndrome find it difficult to train because of the limitations they have in thin and rough mobility. Thin mobility is the movement of small muscles that work to perform difficult and subtle tasks. It is due to the loose muscular tone of the hands and to the small size of the fingers of the children. The Down's child has difficulty catching the pencil correctly, clipping his buttons, cutting with the scissors, and generally performing fine manual tasks. Also, the child's speech is affected as the head muscles (such as the tongue, the lips, the face) are loose and make the vocal joint difficult. Thin mobility is the ability of children to perform activities that involve the involvement of large muscles. These activities are walking, running, throwing, and swimming. Difficulties are caused by muscle hypotonia, the persistence of initial reflexes, the lower of the normal height, and the proximal bones of the feet, hands, and fingers. Children with Down Syndrome need perseverance and patience for



learning about motor activities. The approach to kinetic education can be done through games, theatrical representations, or dancing. Games do not need to be expensive and sophisticated but their diversity can motivate children's interest in the movie. They can use items such as cans, water, and sand every day. Because of their hypotonic, they need intensive activities to awaken and activate them. The general kinetic plan should be designed so that active and less energetic activities alternate and alternately use different muscle groups so that children do not get tired and do not lose interest at the same time. Important moments of relaxation and learning of proper breathing are important. (Burns and Gunn, 1997). Movements must be safe for children with instability. Here it should be mentioned that many activities are accompanied by the teacher, the therapist, the parent, and other children. The role of the parent, teacher, or therapist includes the participant, promoter, and observer in the motion program.

The observation of the adult and the group serves to help, guide, and encourage his motor experience (Burns, Gunn, 1997).

#### VII. THE ROLE OF THE FAMILY OF CHILDREN WITH DOWN SYNDROME

Communication and collaboration between home and school are considered vital by both parents and teachers. It is necessary to provide psychological support to the student with Down's syndrome with enhancers such as reward, encouragement, motivation, and continuous feedback of progress towards empowerment and self-image (Karvounis, 2007, Hristikis, 2006). Therefore, parents' frequent communication with the school and classroom teacher, as well as daily, bilateral support and information, for study guidance, difficulties, behavior, progress, and health status (Lloyd, 1983). For the psychosocial support of the Down syndrome student, the school should seek to participate in all its activities (holidays, excursions, breaks, etc.) (Angelidis, 2011). The extra time for answers, patience, understanding, and encouragement when it comes to both the teacher and his classmates can stimulate his psychology and increase his participation and socialization. Also, the work of graded difficulty, so that the student has work within his / her potential, as well as the open-ended experiential questions, any answer that is considered right, supports his / her psychology and motivates him to engage in the educational process (Angelidis, 2011, Salvara, 2013).

#### IX. CONCLUSION

It is worth noting that with the appropriate school framework and with appropriate support, children can successfully train themselves on self-service, social skills, and basic schooling skills.

Children with Down's syndrome in the decade we are living are very different from 10 or 15 years ago. They are members of their family and the society they live in. If we encourage them, they will step up into a group and seek the knowledge they will be given or the opportunity to develop into an active member of society. We must help each Down syndrome child develop his full potential and personality.

#### REFERENCES

- [1] Aggelidis, P. (Ed.), *Pedagogy of Inclusion*. Athens: Interaction., (2011).
- [2] Behraman, R., Kliegman, R., Jenson, K., *Textbook of pediatrics*. New York: W.B. Saunders Company., (2000).
- [3] Buckley SJ, Bird G., *Teaching children with Down syndrome to read*. Down Syndrome Research and Practice., (1993).
- [4] Buckley, S., Sacks, B., *the adolescent with Down's Syndrome- life for the teenager and for the family*. England: Portsmouth Down's syndrome., (1987).
- [5] Burns, Y. & Gann, P., *Training people with Down's syndrome*. Athens: Hellenic., (1993).
- [6] Capone, G.T., *Down syndrome: Advances in molecular biology and the neurosciences*, Developmental and Behavioral Pediatrics., (2001).
- [7] Chapman R. and Hesketh L., *Language, cognition and short-term memory in individuals with Down syndrome.*, (2002).
- [8] Christakis, K., *Education of Children with Difficulties: Introduction to Special Education.*; Atropos., 1 (2006)
- [9] Cote, Z., Katsantonis, A., *The down syndrome* Athens: Institute of Child Health., (1980).
- [10] Dale, N., *Ways of Working with Families of Children with Special Needs*. (M. Apostoli, Trans.). Athens: ELLIN., (2000).
- [11] Darais, K., *Reading, Writing, and down syndrome* Thessaloniki: University Studio Press., (2002).
- [12] Diamond, L., *Teaching your baby with Down syndrome*. In K. S. Gundersen (Ed.), *Babies with Down Syndrome- A parents' guide*. (2nd ed.) Woodbine House., (1995).
- [13] Gunn, P., *Characteristics of Down syndrome* In Y. Burns, P. Gunn (Ed.), *Education of People with Down syndrome* Athens: Hellenic., (1997).
- [14] Hayes, A., Batshaw, M. L., *Down syndrome Paediatric Clinics of North America.*, (1993).
- [15] Karvounis, PM., *Learning and psychosocial support for children with learning disabilities in the classroom in the book E. Makris-Botsari (Ed.) School Issues Management Issues 1(2007) (72-83)*. Athens: Ministry of National Education and Religious Affairs
- [16] Lloyd, J., *Jacob's ladder: A parent's view of Portage*. London: Costello., (1986).
- [17] McConaughy, F., Quinn, P., *you're Baby's Development*. In K. S., (1995).
- [18] McCune, L., Kearney, B., & Checkoff, M., *Forms and functions of communication by children with Down syndrome and nonretarded children with their mothers*. New York: Springer-Verlag., (1989).
- [19] Morris J, Mutton D, Alberman E., *Corrections to maternal age-specific life .*, (2005).
- [20] Rondal JA., *Language in Down syndrome: current perspectives in Down syndrome: a review of current knowledge*. eds J Rondal, J. Perera, L Nadel, Pub: Whurr Hayes A, Batshaw M. (1993) (1999). Down Syndrome. Clin. Pediatr
- [21] Polychronopoulou, S., *Children and Adolescents with Disabilities and Possibilities*, 4th Ed. Athens: Private Version., 1 and 2 (2001).
- [22] Sack G., *Genetics in Medicine Scientific publications of Paris, Athens.*, (2002).



- [23] Salvaras I., Teaching Children with Special Needs at the Regular School Athens: Grigoris., (2013).
- [24] Sabanis, S., The psychological climate of the class in the book E. Tzelepi-Yannatos (Ed.) Classroom Issues Management Issues 2 (149-159). Athens: Ministry of National Education and Religious Affairs., (2008).
- [25] Stasinou, D., Special Education 2020 for Inclusive or Total Education at the New-Digital School with Digital Champions Athens: Papazisis., (2013).
- [26] Selikowitz, M., Down Syndrome- The facts (2nd ed.) New York: Oxford University Press., (2006).
- [27] Shapiro J. P., Obstetrics & Gynecology Nursing. Athens: Hellenic., (2004).
- [28] Solomon, S., Greenberg, J., Pyszczynski, T., A terror management theory of social behavior: Advances in experimental social psychology. San Diego, CA: Academic Press., (1991).
- [29] Stay-Gundersen, K., Babies with Down syndrome: A New Parents' Guide. 2d ed. Bethesda, Maryland: Woodbine House, Inc., (1995).
- [30] Tzouridou, M., Children with special educational needs. A psycho-pedagogical approach Thessaloniki: Supply., (1995).
- [31] Tsakalis, P., School Refusal-Fa-Violence-Aggression: Two Sides of the Same Problem. In the book E. Tzelepi-Yannatos (Ed.) School Issues Management Issues 2 (2008) (195-214). Athens: Ministry of National Education and Religious Affairs
- [32] Varvogli L., What happens to the child: Neuro-evolutionary disorders of childhood and adolescence Athens. Kastaniotis., (2005).
- [33] Graphite Kusumastuti, et al., The Need of Disability Awareness Training for Regular Students in Inclusive School., International Journal of Recent Engineering Science (IJRES), 4(3) (2017).