PROLOGUE

The sector of society to whom this Holystic ProAfrica work is addressed is the core of Humanity and, in turn, our second conscience, leading us to see that Humanity is self-destructing on ignoring or underestimating their importance. Those who organize society in favour of the strong by sizing up the pros and cons, skimping, stealing down to the last cent from the helpless are devoid of even the most minimal human feelings. Works such as that which is set out herein bear witness to the lack of the commitment, that sensitivity on the part of any kind of social group possessing the authority to lead and inspire Society. This distressingly forgotten sector is the vein of humanity nourished by the Human Rights Act far above and beyond random acts of kindness, charity or solidarity. A society sets itself up as a thing apart, shoving the weakest off into a corner, humanly self-destructs by dehumanizing itself and dehumanizing others.

Unfortunately, the powerful are the ones manipulating the Act for the most part and targeting it unjustly in their own favour, robbing the humbled, the helpless, **the voiceless** of their Rights.

A Society which does not take into account the Rights of these small groups, those adding up to such a tiny part thereof, is selling itself short.

Thanks to the drive of a minority of idealists, it is progressively being made possible for persons who are in need of things such as wheelchairs for their mobility to be taken into account…. and little else. There is hardly anything organized in order for those little girls and boys who have any of the disabilities set out in this program to have places for shelter, recreation, medical treatment and other purposes. It's the process of raising of awareness, possibly set into motion by these children's family members and friends, that is forcing the powerful people in power to make minor decisions favouring the disadvantaged. Although perhaps more highly motivated by not having to deal directly with the people promoting this type of movements than out of any love for those most in need. Authorities showing this type of insensitivity ought to resign from their positions out of their own self-respect.

The main objective of any Ministry of Health should be aimed at alleviating these people's problems, making it possible for their bodies and minds work to the utmost of their already highly limited possibilities. They are entitled to this least decency, as are their parents and family members. They are entitled to know that their children will be respected by National Institutions comparably to the way they are loved by their families.

I admire the loving care, sensitivity and professionalism with which this work is presented. The lives of those who have written this work revolve around these little boys and girls. I daresay that the authors of this study have personally provided hands-on treatment and care for all of the currently known disabilities.

This has to be a book for spreading information within the reach even of the fathers and mothers who have children in any of these psychological, physical or mental situations. This book provides family members with simple, practical (at times illustrative) comprehension of the process their children go through from their youngest ages. This book provides them with the guidelines for addressing the professionals for better understanding their sons' and/or daughters' conditions.

Especially dedicated, almost affectionately, to the professionals whose calling leads them to devote their humaneness to conveying that tenderness of theirs, that relationship bundled among hugs and smiles seeking to create that bond of trust in a patient. It's tremendously gratifying to see children in these situations going up to or welcoming their therapists, almost with the same trust and affection as when they go up to their mothers. The games, the laughter, the playful mischievousness of these children at many of these sessions is the fruit borne out of this patient-therapist relationship, and they are fully able to totally do away with even the tiniest doubts on the part of even the most sceptical.

One last word to the parents and siblings: no matter how great a disability your child, brother or sister may have, their emotional feelings are very much alive and in need of cuddling, kisses, hugs, laughter and play. They're in need of the time you are not able to devote to them. The service and affection given to them on the part of the professionals has to be rounded out 24 hours a day by family love.

Any little improvement in any of their multiple facets has to be celebrated more than a goal scored by your brother or sister in the final round of a competition. In this process, there's no room for words like impatience, disillusionment, bitterness or loss of confidence. Your optimism is the basis of their limited improvement.

The indifference shown toward these boys and girls by society, political leaders or others is hardly understandable, and even more so any indifference on the part of family, which snuffs out that ray of light beating deep in their hearts. At those levels, the disability might be total.

Our healthiness totally free from these limitations is more than reason enough for us to show solidarity with these people who are unable to have full enjoyment of what they naturally should. But our competitive, individualistic, consumerism-oriented society does not encourage attitudes of this sort.

And this is an area with which the Church, which proclaims itself to be the voice of **the voiceless,** should be in very close touch. It is with this responsibility, that the Church has to know how to listen to the Word of God, God's teachings, The Voice of God. And the voicelessness of these little boys and girls is close to the anguished cry of Jesus seconds before his passing: The Voice incarnate in the **voiceless**.

My blessings for this Guide and all those who may have the enjoyment of its teachings in the future.

Ángel Olaran (White Father)
Missionary in Wukro, Ethiopia

PREFACE

Holystic ProAfrica is a non-profit NGO devoted to furthering physical therapy on the African continent which is currently focusing most of its efforts on Ethiopia, a country with 90 million people where barely 350 physical therapists are working.

When we first arrived in Ethiopia in 2009, we encountered young children with severe neurological problems who were not being provided with even the least care necessary and hidden away in infrahuman conditions in their homes, especially in the rural areas. Right now, without the area where we are working, the situation is quite different, treatment being provided for them weekly at specialized centres and some now already integrating into the schools.

A few years ago, we carried out a project for building this country's first public clinic specialised in paediatric physical therapy and neurology.

The site chosen was Wukro, in the Tigray region, near the Eritrean border. This is the location of the mission headed by Ángel Olarán, a Spanish missionary who has been in Africa for 30 years serving as the driving force behind projects for social development and providing care for orphaned children.

As in any international cooperation project, we soon realized that the most important part is not the care-providing programs, but rather the training of the natives (health care professionals and family members) so that they can carry our self-sustainable programs, models which can then be replicated throughout the entire country with the aid of the local governments.

By way of this free-of-charge guide, we are aiming to get our help out to anywhere in the world where the healthcare professionals do not possess sufficient training to provide the care for such special little girls and boys. Our ambition is to translate this guide into all of the languages possible so that it will know no borders and be able to be used wherever it is needed.

Pablo Llanes
President - Holystic Physical Therapy ProAfrica NGO

"As in any project in life, there are ups and downs, moments filled with light and moments filled with darkness. Only some survive the desperation and continue fighting endlessly."

They're crazy idealists who believe their own fairy tales […] , those who say it's possible to change the world, bit by bit, that together we add up to more, that it won't be long now until there's a social revolution toward equality… Soon we realize that the only real solution for there to be a more equal world is in the hands of those governing the developed countries. The ones we vote for without knowing them and in whom we have lost all faith […].

Being a volunteer isn't an action, it's an attitude toward life".

Thoughts of a volunteer
(Facebook: Holystic ProAfrica, 29 October 2014)

INTRODUCTION

We conceive childhood development as being the series of stages through which small children go, a series of physical and psychological changes involving their growth. In childhood development, there are some general emotional, cognitive and motor-related patterns indicative of the abilities and skills which a child should progressively acquire in keeping with their age.

One must not lose sight of the fact that each individual child is a unique person, with their own character, interests and way of learning, and that although the growth of all children takes place similarly, each child has their own pace.

The fact of knowing the stages of childhood development can help parents and caregivers to know what they can expect from a child as the child grows. Observing a child's response to certain stimuli or situations can aid toward detecting signs of disability or developmental problems. Therefore, we have devoted the first part of this mini-guide to briefly describing the milestones in the development of each one of the child's stages, from 0 to 6 years of age so that the persons closed to them can identify any possible warning sign early along.

The second part of this mini-guide is focused more on the specialists, including summarized information on some of the most common disorders. For each disorder, a definition and some basic treatment guidelines are included, encompassing both the treatment objectives plus comments and recommendation on the patient's possible condition and the focal points of care.

This mini-guide is designed to serve as a quick reference guide, no explanation therefore being provided as to the specific exercises and routines for each disorder. For further details concerning the disorders and suggested treatments, as well as other perhaps less frequent disorders, please refer to our Complete Physical Therapy Guide. In this more thoroughly-detailed guide, information is also included on technical aids for posture adaptation, mobility and gait.

CHILDHOOD DEVELOPMENT FROM AGES 0 - 6

Development 0 - 3 months of age

New-born	– At birth, new-borns present what is referred to as “physiological hypertrophy”, their arms and legs being flexed. – Lying on tummy, a new-borns is able to turn head by rotating (without any head control). – Lying on back, moves arms and legs spasmodically. The head, same as when lying on tummy, is turned toward one of the 2 sides. – During this time, sucking begins and neonatal reflexes are predominant.
1 month	– Arms and legs start stretching away from baby’s trunk. – Lying on back, positions the head progressively more along the midline. – During the first month, the baby spends most of the day sleeping, only waking up and crying if hungry or uncomfortable. – Is startled by loud noises.
2 months	– Lying on tummy, raises head and shoulders. To do so, forearms positioned in prone position behind the shoulders support weight. – Eyes track a moving person (tracking to side) and responds to smiling. – Spends longer time awake and takes an interest as to what there is in surroundings. Moving objects and colours attract baby’s attention.
3 months	– Supports self on forearms, which are positioned forward so that the baby’s elbows are at shoulder level. – Acquires head control. – The baby’s viewing area increases. Baby is able to dissociate head from scapular girdle, being able to turn head both left and right. – Lying on back, plays with his or her hands and grasps objects involuntarily due to palmar grasp reflex. – If you position yourself up close to the baby, he or she will touch your hair, will tug on it, will touch your face and, if you speak to him or her, will coo back at you. – Laughs out loud.

Recommendations 0-3 months of age:

- During the first months, the baby receives most stimuli via the sense of touch, so touching, holding, cuddling and hugging the baby are highly important.
- Baby is soothed when talked to, preferring the human voice over and above any other sound.

- It is advisable to provide the baby with medium lighting and to avoid abrupt changes in light so as to favour adaptation.
- The baby needs widely-varied objects for sharpening his or her senses: hearing, touch, sight.
- The child needs to be provided with a small, pleasant space making him or her feel safe and secure.
- It is highly important to change the baby's position and place it on its tummy during the hours when awake so that the baby can properly develop his or her muscles and mechanisms for pushing up against gravity.
- For sleeping, position the baby lying on his or her back so as to prevent sudden infant death syndrome, but place him or her on tummy when awake so as to encourage development.

Development 4-6 months of age

4 months	– Lying on tummy, keeps legs stretched out. The child's elbows are beyond the shoulder line, and the spinal column is gradually lengthening. – Child is able to shift weight to one elbow and stretch out opposite arm to reach for an object. – The trunk portion of the spinal column begins to show the ability to turn. – Child raises his or her hands to the midline and starts playing with them. – First sign of voluntary reach and grasping.
5 months	– Lying on tummy, is able to support himself or herself by resting hands on floor with arms stretched straight out. – Full hip extension. – Increased lower back curve. – Lying on back, explores own legs and knees. – First sign of swimming movements, as of which time the child is able to pivot on abdomen. – Smiles in the mirror. – Reacts negatively when mother moves away from him or her. – Children start taking a greater interest in objects and trying to pick them up and make noise with them if they make a noise. – If you cover the child's face with a handkerchief, the child will try to remove it from its face.
6 months	– Child sits up propping self up with hands positioned in front of him or her. – Rests hands pelvis. – Starts rolling over from lying on tummy to lying on back. In order to do so, it is necessary for the flexing-extending synergy, spinal column rotating movements and the dissociation of the shoulder and pelvic girdles to have been completed. – Baby holds onto feet with hands. – Increased abdominal muscle tone. – Babbles; vocalizes 4 different sounds. – Reacts on hearing his or her name. – Recognizes the people around him or her and reacts to them with smiles and special gestures. – Makes noises to call the adult's attention.

Recommendations 4-6 months of age:

- Offer the child objects of different shapes, textures and colours that he or she can pick them up and shake them around.
- It is normal in this stage for the child to put the objects in his or her mouth as its own way of exploring them.

- Start interacting games: play peek-a-boo by covering the child's face with a cloth so that the child can take it off, sit baby on your knees and bounce him or her up and down…
- It is advisable to set sleeping and feeding schedules so that the child will progressively work into routines.

Development 7 - 12 months of age

7 months	- Sits up independently, with hands out in front for support. - Pre-parachute reactions - Brings feet up to mouth. - First sign of radial palmar grasp. - Puts things in mouth. - Shifts objects from one hand to another. - Picks up 2 blocks (1 in each hand). - If you give the child food to eat that he or she doesn't like, the child will close his or her mouth and won't want to continue eating.
8 months	- Sits up for long periods - Picks up a block and then lets it go. - Plays at knocking 2 objects together. - Starts vocalizing syllables (ga, ta, da…). - Will make an effort to reach toys located at a distance. - Plays at throwing objects down on the floor to see how they fall.
9 months	- Starts moving around on own (commando-crawling, pulling self around on tummy using forearms). Often starting by rocking backward to then propel self forward. - Lateral parachute reactions. - Moves around on all fours. - Rolls over from back to tummy. - Gets on hands and knees first to then get on knees with support. - Remains standing by pulling on support from arms. - Lifts hands up in air wanting to be picked up and starts waving good-bye.
10 months	- Sits up independently, being able to manipulate objects in this position. - Starts crawling; first moving one arm and the leg on same side together, then cross-crawling, moving one arm and the opposite leg together. - Starts pulling self up by holding onto the crib slats, using the legs to a greater degree. - Starts developing balancing reactions and standing upright on two feet. - Cruises, taking steps by pushing a chair. - Shifts from lying down to sitting position. - Says a two-syllable word. - Pincer-grasps a small object between thumb and index finger. - Takes objects out of and puts objects into a container.

11 months	– Moves sideways by placing both hands on wall or by holding onto furniture. – Takes steps when held by both hands. – Presses buttons – Responds to the command “give me”. – If you say “no” in response to some action, the baby will look at you in surprise.
12 months	– Walks when held by one hand. – Remains standing for a few seconds without any support. – Shakes head to say “no”. – Helps on being dressed or undressed. – First words. – Puts an object inside a container.

Recommendations 7-12 months of age:

- Needs roomy, safe areas allowing him or her to move around (i.e. a rug near a piece of furniture he or she can use to get around with and for getting up on his or her feet.
- At this stage, all objects serve as playthings, both their own toys and stories, fit-together toys, drums… common everyday objects like plastic boxes, keys …
- Play with child in front of the mirror, making different facial gestures (sad, happy, sticking out tongue…).
- Imitate the sounds, babbling done by the child and his or her first words for stimulating the child to repeat them.
- Sing simple songs including gestures to the child.

Development 13-24 months of age:

14 months	- Unstable walking, falling often. - Crawls up stairs. - Points with finger. - Scribbles on paper. - Is interested in the toys other children have and tries to get them. - Likes to look at himself or herself in the mirror.
18 months	- More stable walking. - Can squat down to pick up an object without holding onto anything. - Takes a few steps backwards. - Runs stiff-legged. - Walks up stairs holding onto one hand. - Gets up onto and down off bed. - Stands up from sitting on floor. - Pushes a ball with foot. - Points to and names some objects and own body parts. - Turns pages 2 or 3 at a time. - Starts eating with a spoon. - Drinks only out of a glass. - Start of functional play.
20-21 months	- Walks down stairs holding on with one hand. - Walks up stairs holding onto the handrail. - Walks on uneven ground. - Stacks 5-6 blocks into towers. - Runs with coordinated movements. - Makes two-word sentences. - Plays at mimicking.
24 months	- Runs avoiding obstacles. - Kicks a ball. - Stands on one foot with help. - Moves around rhythmically. - Jumps down off a stair step. - Stacks 6-7 blocks into towers. - Threads large beads onto a string. - Turns pages one by one.

Recommendations 13-24 months of age:

- Encourage the child's moving around on different surfaces.
- Facilitate objects the child can move, drag, transport, pull…

- Hand the child objects they like when he or she is standing in order to encourage balance in this position.
- Encourage games with a ball.
- Avoid W-sitting.
- Name the characteristics of the objects surrounding the child for him or her (size, colour, shape, uses).
- Play with the child by hiding and looking for objects.
- Encourage games in which the child has to use a means for achieving an objective, such as pushing a button to play music.
- Facilitate filling and emptying games, using a box and objects the child can put into and take out of the box.
- Games in which the child has to fit together or string things are recommendable at this age.
- Read simple stories to the child.
- Teach the sounds of animals and common everyday objects.
- At this stage, the child’s self-dependence has to be encouraged and daily routines established.

Development 2-3 years of age

30 months	– Builds 8-block towers. – Walks up stairs by himself or herself, alternating feet. – Stands on one foot without help. – Puts on own shoes by himself or herself. – Runs with a certain degree of control, halts and changes direction. – Pedals a tricycle. – Strings large beads.
36 months	– Hops on both feet. – Walks along the sidewalks curb with one foot up on the sidewalk and one foot down on the street. – Walks up and down stairs alternating feet. – Swings self on swing when pushed to start off. – Climbs up on a slide and slides down. Opens and closes screw-top jars and turns faucets on and off. – Uses spoon and fork. – Uses play dough and modelling clay. – Starts using scissors. – Builds 9-block towers.

Recommendations 2-3 years of age

- Play games with the child that involve jumping, running (i.e. hopscotch).
- Encourage the child walking different ways: on tiptoes, heels, like a soldier …
- Ball games: pitching, bouncing, ball-dribbling sequences.
- Build different shapes with blocks: houses, castles, cars.
- Shape and colour distinguishing games
- Give the child paper and paints so that he or she can finger-paint whatever he or she wants.
- Tell the child stories and get him or her to repeat them back to you.
- Give the child small responsibilities so that he or she can help in the home.
- Set clear rules for the child and help him or her to follow them so that the child can be organized.

Development 4 - 6 years of age

4 years	– Builds a 10-block tower. – Stands on one foot. – Learns to ride a bicycle. Rides through an obstacle course. – Buttons own clothes and is able to tie own shoelaces. – Builds bridges with building blocks. – Children age 4 know all the main colours and can name their own body parts.
5 years	– The child hops on both feet and on one foot. – Rides a bicycle without any problem. – Learns complex motor activities such as turning cartwheels.
6 years	– Is capable of sewing with a large needle or winding thread on a bobbin. – Knows the days of the week and some details such as his or her own address and telephone number. – Learns logical reasoning. – As of 6 years of age, the child's righthandedness or left-handedness is defined.

Recommendations 4-6 years of age

- Suggest various activities and let him or her choose among them.
- Let the child move around different places, investigate the surroundings.
- Offer the child toys enhancing his or her creativity.
- Encourage the child to play with other children.

Warning signs

Each individual child evolves at a different pace and variably, there being any progress or delay mastering one activity or area (motor, cognitive, language…) not meaning that the child has a problem, but should call attention to the possibility of enhancing the stimulation of a certain area in particular or of the overall development.

In following, a list is provided of the signs to take into account in the different stages for detecting an abnormality in the children's proper development:

At 3 months of age, the child:

- doesn't smile
- doesn't fix their gaze
- isn't able to hold up head
- doesn't react to sound stimuli

At 6 months of age, the child:

- doesn't shown interest in picking up objects or doesn't use one of his or her hands

At 9 months of age, the child:

- cannot stay sitting up
- isn’t interested in looking at or touching the things located around him or her
- doesn’t jabber

At 12 months of age, the child:

- isn’t able to remain standing holding onto furniture
- doesn’t seek to communicate with adult
- doesn’t explore new toys

At 18 months of age, the child:

- isn’t walking
- isn’t saying words
- isn’t seeking to interact with others

At 24 months of age, the child:

- walks unstably
- doesn’t’ play mimicking games
- goes off with anyone he or she doesn’t know

At 36 months of age, the child:

- doesn’t play or only plays by himself or herself
- doesn’t interact with others
- doesn’t show an interest in the surrounding environment
- doesn’t hold attention

MAIN DEVELOPMENT DISORDERS AND CONDITIONS

EPILEPSY

DEFINITION

Epilepsy is a chronic central nervous system (SNC) disorder. The **symptoms** can be:

- Motor, auras, sensory, autonomic, psychic
- May or may not affect consciousness

In order to be considered epilepsy, 2 or more spontaneous crises must occur spaced at least 24 hours apart.

A distinction must be made between the epileptic crisis concept and the convulsion concept, which refers to the involuntary muscle contractions of any origin (not mandatorily cerebral).

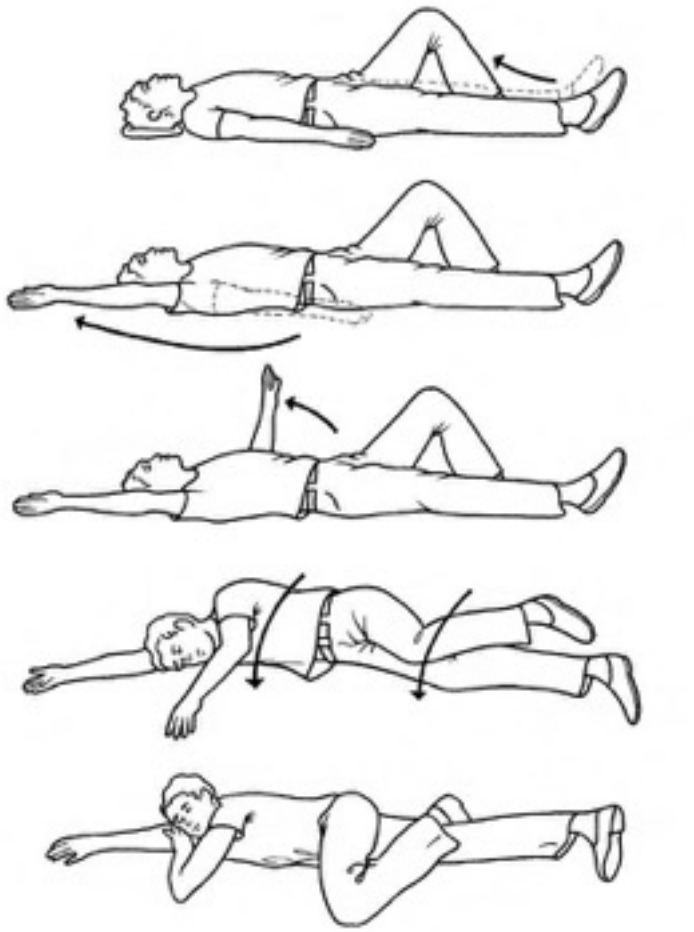
Signs and Symptoms

It is highly important to ask about the crisis, to describe it in detail: circumstances under which the crisis takes place, sleeping-waking relationship, existence of aura (patient's feeling that a crisis is about to begin), whether involving seeing a colour, smelling a non-existent odour, etc.), state of consciousness, motor symptoms, length of the crisis, recovery. Similarly, it is also important to take down the family and personal medical history.

WHAT TO DO WHEN A CRISIS OCCURS

A) In a first or second crisis

- Observe the semiological characteristics
- Try to recognize and differentiate epilepsy from other non-epileptic paroxysmal events.
- Place the patient on a hard surface, preventing the patient from injuring himself or herself on nearby objects.
- Turn head to one side for easing breathing.



- Don’t try to hold down or restrain the patient.
- Suction secretions, if necessary.
- Don’t put anything into the person’s mouth.
- Wait at the person’s side until he or she regains consciousness.

B) Patient with certain diagnosis of epilepsy:

- Identify type of crisis and syndrome.
- Identify reasons for the repeated crises:
    - Went off medication
    - Not getting enough sleep
    - Related to menstrual cycle
    - Fever syndrome
- General care (listed in preceding Section A) above
- Check the respiratory function
- Check the cardiovascular function

INFANTILE CEREBRAL PALSY

DEFINITION

Cerebral palsy (CP) is a group of permanent movement and posture disorders which limit a child's natural activity. Cerebral palsy is due to an insult to the immature brain which can be caused before, during or after birth.

Cerebral palsy (CP) is characterized by disorders in:

- Neuromuscular system
- Musculoskeletal system
- Sensory disorders
- Perception disorders
- Cognitive disorders
- Communicating disorders
- Behavioural disorders
- Secondary presence of disorders such as epilepsy

The damage is permanent; however its manifestations can indeed progressively change as the child grows, develops and tries to compensate for the postural and movement-related difficulties.

Clinical signs and symptoms

The signs and symptoms could be divided into two major groups:

- Negative symptoms
    a) Shock: Manifests with paralysis and hyperreflexia.
    b) Hypotonia: Onset of weakness and lessening of strength
    c) Lessened agility in movement
- Positive symptoms
    a) Abnormal body positions (posture)
    b) Exaggerated self-perceptive reflexes (hyperreflexia or spasticity) Manifested by bone-tendon hyperreflexia and by velocity-dependent resistance to passive movement.
    c) Exaggerated skin reflexes

Classification

A. By topographical distribution

- **Hemiparesis –**Limited to affecting half of body (either arm and leg or right side or left side of the body)
- **Diparesis –** Affecting all 4 limbs, usually affecting the legs to a greater degree.

- **Triparesis –** Affecting three limbs.
- **Tetraparesis –**. Affecting the trunk and all 4 limbs.
- **Monoparesis –** Affecting only one limb, although usually involving the homolateral limb being slightly affected.

B. By symptoms:

- **Spastic cerebral palsy –** This is the most frequent form and is characterized by:
    - Slow movements lacking the necessary adjustment for fine-precision activities, lacking the naturalness of normal movement.
    - Velocity-dependent hypertonia, spasticity.
    - Pattern characterized by internal rotation and adduction of shoulders, flexion of elbow, pronation of forearm, flexion of wrist and flexion of fingers with adduction of thumb. At the lower limb level, there will be an extension, internal rotation and adduction of hip, extension of knees and plantar flexion.

- **Dyskinetic or athetoid cerebral palsy –** Characterized by:
    - Uncontrolled involuntary movements abnormal in their rhythm, spatial characteristics and direction, greatly influenced by emotions, activity or the conditions of stability.
    - Disorders of tone or posture. The tone easily fluctuates from hypotonia to hypertonia.

- **Ataxic cerebral palsy –** Characterized mainly by:
    - Symptoms of hypotonia and hyper-extensibility of joints, in conjunction with poor stability on attempting to hold a body position or deficient balance (trunk and head also present a back and forth movement).
    - Imprecise coordinated voluntary reaching movements, uncoordinated eye movements.
    - As far as muscle tone in concerned, ataxia is almost always linked to the onset of hypotonia, spasticity or dyskinesia.

- **Hypotonic cerebral palsy–**This is an infrequent type of CP. It can be the first stage which appears over the course of the evolution of the manifestations inherent to cerebral palsy. Hypotonic cerebral palsy is characterized by:
    - Hypotonia or persistent low muscle tone in conjunction with bone-tendon hyperreflexia.

TREATMENT OF CEREBRAL PALSY

Spastic tetraparesis

Objectives:

- Normalize tone and align
- Achieve maximum functionality
- Achieve good balance and straightening reactions
- Prevent contractures and deformities

Remarks:

- *Low trunk tone and high tone of the four limbs*
- *Poor active movement over short distances and lacking in variety, predictable movements (always the same patterns), overall and with difficulty at start.*
- *The most customary pattern is flexing.*
- *Poor or absence of balancing reactions in the most affected parts.*
- *Over the course of time, due to these abnormal body positions being maintained, contractures and deformities usually set in.*

Spastic dyskinesia

Objectives:

- Normalize tone and align
- Unblock pelvis (facilitate the movements on all planes).
- Achieve greater dissociation between the two legs.
- Improve cocontraction of hip flexors and extenders.
- Achieve good balancing and straightening reactions.
- Prevent contractures and deformities.

Remarks:

- *Low trunk tone and high tone of lower limbs.*
- *Moving both legs together at same time, with little dissociation between one leg and the other.*
- *The most customary pattern is flexing: flexion of hip, flexion of knees and feet in plantar flexion (equinus). Occasionally, the shortening of the triceps surae muscle can be offset with support of the heel and hyperextension of the knee.*
- *The balancing reactions can be poor or absent in lower limbs.*
- *Over the course of time, due to these abnormal body positions being maintained, contractures and deformities usually set in.*

Hemiparesis

Objectives:

- Normalize the tone of the side affected and align: symmetry.
- Integrate the affected half of the body
- Achieve normal movement and posture patterns.
- Achieve good balancing and straightening reactions on the affected side.
- Prevent contractures and deformities on the affected side.
- Reduce the associated reactions on the affected side.

Remarks:

- *From the first months of life, special attention must be given to asymmetries, as they generally have an asymmetrical perception of their body, with less self-perceptive information from the half of the body affected. Hence, they do not usually integrate this half of their body into the daily living activities, and the asymmetry becomes evident in all positions and movements. It will be of crucial importance during the treatment to suggest the activities from the affected side to the patient so that the he or she will have to integrate that side.*
- *During the process of manipulating the healthy side, associated reactions and increased spasticity of the affected side occur.*
- *Over the course of time, due to these abnormal body positions being maintained, contractures and deformities usually set in.*

Ataxia

Objectives:

- Normalize tone and align.
- Activities for activating the trunk and providing pelvic stability.
- Strengthening musculature (important pelvis and knees).
- Increase cocontraction at pelvic level.

Remarks:

- *Children who have ataxia present a tremor due to the fact that their muscle tone is low, and there is hence a major lack of stability. In order for us to be able to move, we need some parts which are stable so as to be able to move others. We normally need stability in more proximal areas so that will can make distal movements. For example, to take a step when walking, we need for the pelvis to remain stable so that we will be able to move our leg and take a step.*

Athetosis

Objectives:

- Normalize tone and achieve the utmost possible degree of symmetry.
- Encourage proper positioning outside of the physical therapy sessions.
- Get the utmost degree of functionality possible out of their movement and adapt to their environment to gain autonomy.
- Provide load and rotations which minimize the involuntary movements.

Remarks:

- *The main characteristic of this disorder is the fluctuation in tone, in other words, the muscle tone suddenly varying all at once.*
- *The children who have athetosis present involuntary movements of their legs and trunk which are brought on by an emotional state, head position (in these children, it is highly important to achieve proper positioning to the utmost possible degree of symmetry), external stimuli, etc. These involuntary movements can be movements in many directions or in the form of an overall pattern, taking the entire body to extension or flexion (dystonias).*
- *At the point in time at which the child experiences the spasm, it cannot be curtailed, given that the tone rises to such a degree that it will be useless to try to halt the movement, it being necessary to wait until the spasm starts to subside to bring the trunk and head toward flexion and the limbs to the midline. To normalize the tone and decrease spasmodic movements, it is highly useful, in addition to the aforementioned, to perform rotations (dissociating the girdles) and apply load.*
- *In any case, these children vary to a great degree, not only in comparison with one another but also they themselves, as a result of which there will be times at which we must carry out a treatment more like that of the children who have spasticity and other times more like that of the children who have low tone. We must evaluate each child's individual situation at each given point in time in order to assess his or her needs at that specific point in time.*

Hypotonia

Objectives:

- Normalize the tone.
- Activate the musculature against gravity.
- Prevent bone-joint deformities.
- Achieve active, autonomous movement against gravity.

Remarks:

- *Low tone leads to these children having difficulties involving voluntary movement. To help raise this tone and activate the musculature, activities involving a great deal of active movement and strong stimuli must be carried out.*
- *Older children may develop muscle contractures but, above all, present a joint laxity which, due to the lack of "braking" on the part of the muscles, may increase and cause damage to the joint structures in the long term.*

CHROMOSOMAL DISORDERS

DEFINITION

Chromosomal disorders are changes which have a bearing on the number or structure of the chromosomes. Given the heterogeneity of the possible symptoms, it is complicated to provide a compendium of specific symptoms. Nevertheless, the norm (aside from the possible physical traits characteristic of each syndrome) is to encounter a marked overall hypotonia along with a greater or lesser degree of joint laxity.

TREATMENT OF CHROMOSOMAL DISORDERS

Objectives:

- Increase overall postural tone
- Prevent deformities such a *pes plano valgus* (flat foot), flat back or kyphosis.
- Strengthen the antigravity musculature

Remarks:

- *As previously discussed, these chromosomal disorders have symptoms in common and symptoms specific to each individual disorder. In order to be able to carry out an overall treatment, we have selected: delayed motor development, muscular hypotonia, eye-hand coordination disorder (we must pay attention to the visual stimuli and to manipulation throughout the entire treatment, giving the patient the stimuli suited to his or her age at each point in time), ataxia-apraxia (puppet-like gait) and uncoordinated arm and leg movement.*
- *For carrying out the treatment, the child's motor development must be taken into account as well as having a knowledge of the milestones a child achieves at each stage of his or her life to thus be able to carry out a good treatment.*

MUSCULAR DYSTROPHIES

DEFINITION

Muscular dystrophies are a group of hereditary disorders which are clinically and genetically quite heterogeneous, the onset of which occurs at birth, manifesting in early infancy. Striated muscle is mainly affected, possibly causing cardiac disorders, given that the heart is a striated muscle. These disorders include Duchenne, Becker or Steinert muscular dystrophies.

TREATMENT OF MUSCULAR DYSTROPHIES

Objectives:

- Maintain the musculature and functional activities the longest length of time possible.
- Avoid muscle fatigue.
- Prevent contractures and deformities.

Remarks:

- *It is important to take into account that these children tire easily, so we must respect their times and needs for rest and adapt ourselves to the child in each one of the child's stages of evolution, the treatment therefore being divided into the different stages of the evolution of this disorder.*

INFANTILE SPINAL MUSCULAR ATROPHY

DEFINITION

This is a neuromuscular disorder of a genetic nature which manifests by way of a progressive loss of muscle strength. This occurs due to the motor neurons of the spinal cord being affected, leading to it not being possible for the nerve impulse to be transmitted correctly to the muscles and the muscles hence becoming atrophied. There are 3 types: Type I being the most severe and involving the earliest onset, Type III being the most minor and involving the latest onset.

TREATMENT OF INFANTILE SPINAL MUSCULAR ATROPHY

Objectives:

- Strengthen the musculature.
- Maintain functional abilities and respiratory capacity.
- Prevent contractures and deformities.

Remarks:

- *There are three types of Infantile Spinal Muscular Atrophy, the symptom common to all three being muscle weakness, which causes secondary disorders, such as: scoliosis, reduced respiratory capacity due to the weakness of the muscles involved and fatigability.*

SPINA BIFIDA

DEFINITION

Spina Bifida is the most frequent congenital disorder resulting from a defect in the closing of the neural tube. The spinal canal closes incompletely causing a faulty fusion of

the vertebral arches, possibly affecting both the central nervous system and the skeleton and skin.

TREATMENT OF SPINA BIFIDA

Objectives:

- Prevent deformities and contractures.
- Avoid possible bone fractures and skin lesions.
- Achieve the greatest degree of independence.

Remarks:

- *It is important to make the most thorough evaluation possible of the degree of the damage, given that due to the irregularity of the damage, the signs may be asymmetrical. We must evaluate the sensitivity, the condition of the skin, the joints and muscles, the patient's balance, their functional capacity and the family relationship. Throughout the entire treatment, we must bear closely in mind the degree of the damage (given that the activities which he child will be able to carry out will depend on the musculature which maintains the innervation), the contractures and the condition of the skin.*

OBSTETRIC BRACHIAL PLEXUS PALSY

DEFINITION

Due to a complication during the birthing process, a stretch injury is caused to the nerves of the brachial plexus, resulting in a flaccid monoplegia of the upper limb.

TREATMENT OF OBSTETRIC BRACHIAL PLEXUS PALSY

Objectives:

- Prevent muscle contractures and deformities.
- Maintain joint range of movement.
- Stimulate the atonic muscles and relax the hypertonic muscles.
- Improve sensory-motor integration.
- Re-educate function.

Remarks:

- *Physical therapy treatment does not have a direct effect on the innervation, but rather on prevention so that deformities will not occur, and on the improvement of functionality. It is highly important to take into account that the treatment must be early and continued.*

SCIATIC PARALYSIS

DEFINITION

Secondary to inter-arterial catheter, above all in the umbilical artery, due to spasm of the inferior gluteal artery. Nevertheless, just as at other ages, the most frequent cases are those caused by intramuscular gluteal injection, most especially in premature babies, in whom this route is now being used to a progressively lesser degree.

SCIATIC PARALYSIS

Objectives:

- Strengthen musculature and preserve innervation.
- Prevent contractures and deformities.
- Give the technical aids necessary for improving their functionality.

Remarks:

- *When a patient diagnosed with sciatic nerve paralysis comes into the office for treatment, the first thing that should be done is to make an evaluation of the extent of the injury. The nerve may be fully paralyzed, although a partial injury is most often the case, when the external or internal popliteal sciatic nerve is affected.*
- *Damaged external popliteal sciatic nerve, which innerves the anterior tibial muscles, common extensor and the extensor proper of the toes and lateral peroneal nerves. The patients will be found to have been affected mainly in the movement of dorsal flexion and eversion of the foot, the foot taking on an equinovarus position. At the sensory level, the disorder will be located on the external side and dorsum of the foot.*
- *Damage to the internal sciatic nerve which innerves the gastrocnemius muscles, soleus, posterior tibial, common flexor of the toes, long flexor muscle of the big toe and the plantar muscles. The plantar flexion and inversion movements will be affected. At the sensory level, the disorder will be located in the area of the Achilles tendon, sole and outer edge of the foot.*

POLIOMYELITIS

DEFINITION

Poliomyelitis is an acute viral disease characterized by an asymmetrical flaccid paralysis caused by the polio virus.

TREATMENT OF POLIOMYELITIS

Objectives:

- Strengthen the musculature.
- Prevent contractures and deformities.
- Give the technical aids necessary for improving their functionality.

Remarks:

- *The treatment in the acute stage entails postural changes, muscle strengthening and stretching, a more in-depth treatment being carried out when the advanced stage is reached.*

GUILLAIN-BARRÉ SYNDROME

DEFINITION

Guillain-Barre Syndrome (GBS) is an autoimmune disorder which causes a demyelinising neuropathy extensively affecting the peripheral nervous system (PNS). Onset occurs following a viral or bacterial infection. This syndrome causes a rapidly-progressing symmetrical weakness, commencing distally and advancing proximally, occasionally even affecting the facial, swallowing and breathing muscles. This syndrome usually involves loss of bone-tendon reflexes and minor or no sensory signs.

The peripheral nerves are damaged, and the nerve signals cannot be effectively emitted. Hence, the muscles begin losing their ability to respond to the brain signals, and the brain also receives fewer sensory signals than the rest of the body, making it impossible for different sensations such as heat, pain ... to be felt. Alternatively, the brain may receive inappropriate signals, in other words, paresthesias and hyperesthesias. Due to the fact that the nerve signals which go back and forth to and from the limbs have to travel a long way to reach the brain, it will be the limbs where the muscle weakness and the tingling sensations will first show up, to then later progress in an upward direction.

TREATMENT OF GUILLAIN-BARRE SYNDROME

Objectives:

- Prevent the onset of muscle retractions.
- Care for the skin, avoiding the onset of pressure ulcers.
- Prevent respiratory complications due to decreased pulmonary ventilation.
- Maintain joint range of movement.
- Prevent circulatory problems.
- Restore motor function.

Remarks:

- *Physical therapy must begin early along so as to avoid possible complications such as thrombophlebitis and joint deformities. Our prime objective is to reduce the severity of the muscular atrophy which is caused as a result of the long-term paralysis and, secondly to help restore the motor function, which takes place in a proximal-distal direction in children.*

ATTENTION DEFICIT AND DISTURBING BEHAVIOUR DISORDERS

DEFINITION

Attention deficit-hyperactivity disorder (ADHD) is a disorder commencing during early childhood. This syndrome is characterized by a degree of **impulsiveness, activity and attention** inappropriate for the age of development. Many young children and adolescents with ADHD have problems controlling their behaviour and abiding by the rules and therefore have problems adapting to fit into the family and social environment and in relations with their peers. They may also have emotional or behavioural disorders.

PERVASIVE DEVELOPMENTAL DISORDERS OR AUTISM

DEFINITION

The following are considered to be pervasive developmental disorders (PDD):

1. Autism
2. Rett Syndrome
3. Childhood Disintegrative Disorder
4. Asperger Syndrome
5. Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)

These disorders are characterized by an alteration in different functional areas leading to an atypical course of evolution in the child's development. This causes a delay and an alteration in the normal patterns of child development affecting mostly three areas: social relations, communications and behaviour. The clinical characteristics are:

1. Alterations in social relations and social interactions.
2. Alterations in verbal and non-verbal language.
3. Presence of patterns and interests restrictive and repetitive in behaviour.

TREATMENT OF PDDs

Objectives:

- From the physical therapy standpoint, we will focus on the mental and sensory functions, pain, the neuro-musculoskeletal functions related to movement, learning and using the knowledge acquired, taking care of oneself, interactions and interpersonal relations and the development of their community life.
- It is important to evaluate the development of all of these areas in order to focus on the deficient aspects and provide the child with the necessary sensory and movement-related experiences.

Remarks:

- *From the motor standpoint, at least 65% of the children who have a PPD present a greater or lesser degree of developmental delay. The motor problems on record for these children include awkward gait, poor muscle tone, problems keeping their balance, deficient motor control and manual dexterity and difficulties with praxias and planning of movements, being at risk of clinically significant motor deficiencies.*
- *Working toward achieving the objective entails providing the child with sensations and experiences as a result of having problems interacting with the environment, not exploring the surroundings and therefore not fully developing in all areas.*

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