THE ROLE OF PHYSICAL THERAPY IN THE RECOVERY OF THE PATIENT WITH DOWN SYNDROME

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Abstract: In this scientific article we want to highlight the importance of Kinetotherapy in Down Syndrome. In order to be able to work with people with Down Syndrome, first of all it is necessary that we understand these people. It is not an easy job and it requires a lot time for these people to learn or improve certain motric skills. An example is that for a person with Down Syndrome a simple action such as "buttoning clothes" can take months and even several years.
Our role as Kinetotherapists is to be able to help these people live as much as possible close to normal.

Introduction

Our body is made up of millions of cells that are part of chromosomes, and on each of the chromosomes it is a small continuous thread also called ADN/ DNA, each spiral of ADN/ DNA determines each person's gene, people having a number of thousands and thousands of genes.
The number of chromosomes that people have is 46, each person inherits this number of chromosomes from the parents, more precisely 23 chromosomes come from mother, and 23 chromosomes from father, this means that each person has two sets of chromosomes, for example a total of 23 pairs. For our body and our development as healthy people it is extremely important to have a correct number of chromosomes and gene [3]. Each change in the number of chromosomes can lead to diseases.

These changes can be manifested by the addition of a chromosome or the absence of a chromosome from a pair that can lead to severe changes in our development and health. In the moment we talk about Down Syndrome, things are decided from the first moments of intrauterine life. By the name of syndrome we can understand certain

signs and symptoms that are associated with certain affections, when we talk about Down Syndrome, in addition to the signs and symptoms specific to this disease, special attention parts of genetics must also be given in order to be able to understand where this affection starts from and the way it manifests itself both physically, mentally but also from a genetic point of view[1,4].

In the case of people with Down Syndrome there are 3 types of genetic changes that can appear:

- Changes in the number of chromosomes may occur. The most common case of changes in the number of chromosomes is Down Syndrome, these children having 47 chromosomes instead of for example 46 chromosome that is on chromosome 21 instead of 2 copies there are 3, hence it comes the name of 22"trisomy 21" having the highest percentage, about 95% of cases.
- Translocation, the only form that is inherited directly from both parents in about 4% of cases.
- The Mosaicism is also the rarest form in which chromosome 21 appears additionally only in certain cells representing only 1% of cases.

The regular medical examinations are extremely important for the prevention of congenital malformations, problems that appear during their life, if they are treated on time they can be ameliorated. An extremely important thing on the medication side is that these children do not know how to express certain symptoms of the disease even if they have a fairly high tolerance when it comes to the intensity of the disease, this thing can cause problems throughout life in some cases reaching quite late to the doctor for this reason a regular consultation/ examination should be performed [5].

Most problems that arise during life can be corrected but these ones require a lot of work from the part of parents and therapists. There are also programs that help children with disabilities in preschool period, they are also called early intervention programs and it is desired that this program starts in the third month of life. All of these early intervention programs include specific treatment programs adapted to this deficiency. These specific programs may include "physiotherapists, logopedics / speech therapy, occupational therapy, etc." The therapists are specially trained to work with these children, the programs can be done in certain centres or offices but they can also be made at the child 's home in some

cases, there are no studies which show that working at the child's home is more favourable for the recovery program, the only study that comes in support of therapists is represented by the studies that show that when all the therapeutic activities for the child are done in the form of games and we let to the child ˈs choice which exercises the child wants to perform, the results are more visible much faster and the way of working with the child is easier compared to a predetermined or imposed schedule. In all this program we must include the parents as well because they play a decisive factor in the way of growing the child , the way to work at home must be made by parents in their free time, just a few hours a week are not enough to help children's development, parents can perform and take certain parts of kinetic treatment on their own, for example they can do gymnastic exercises with children every day or various games that improve motric skills. For this thing, courses or workshops are organized that help parents to better understand how to work with the child or what exercises or games can help a more harmonious development of the child's body [2].

Kinetotherapy in Down Syndrome plays an extremely important role. We, as kinetotherapists, we must first of all know how to work with patients. Even if at first it does not seem to be a hard job, various surprises can appear during the therapy. There are extremely frequent cases in which the child or the patient does not want to work, then you, as kinetotherapist, must turn the whole recovery into a game, a game in which the patient can choose what he wants to do, not us to impose a certain set of exercises. I can say that it takes a lot of creativity and a lot of patience to work with these people.

Material and method

In performing this study, we started from the hypothesis that using kinetic means we can recover the patient with Down Syndrome.
Through the kinetic programs applied individually to each patient with Down Syndrome, we can obtain favourable results that can be observed after a number of 3-4 weeks. The results are quite high in the first 3-6 weeks, for example when we apply motric routes/ directions in our recovery program, the child memorizes the motric route/ direction as a pattern, the problems appear when we change the route/ direction or the activity we do with the patient . From this thing, in the first 3-6 weeks we can see visible results but after these 6 weeks the results will appear more and more difficult.

In order to establish the best possible treatment for the patient, an examination is needed before starting the treatment and a periodic examination in order to see the results which have been obtained but also to be able to notice what it is needed to change in our kinetic treatment. People with Down Syndrome have a lot of diseases both on the motric side but throughout their lives they are prone to problems such as "scoliosis, Kyphosis, muscle hypotony". When we talk about designing a treatment program for people with Down Syndrome, we need a broad examination. The evaluation in Kinetotherapy can be performed by two methods: *subjective evaluation* or *objective evaluation*.

(Table 1 represents a table of motric skills evaluation)

Name		*Date of birth*	
Diagnostics		*Date of evaluation*	

No.	Severe motric skills	*Yes*	*No*
1.	The child walks without difficulty.		
2.	He runs.		
3.	He can bend without difficulty to pick up objects.		
4.	He climbs up the stairs by feet alternation with help.		
5.	He climbs down the stairs by feet alternation with support.		
6.	He passes over low height obstacles.		
7.	He is able to run without difficulty.		
8.	He can climb up on various objects or on espalier.		
9.	He has difficulties in walking backwards.		
10.	He climbs up low height steps.		
11.	He climbs down low height steps without difficulty.		
12.	He can walk on tiptoes .		
13.	He can catch a ball of different sizes and after that to throw away the caught ball.		
14.	He can kick the ball .		
15.	He can make jumping jacks with both feet.		
16.	He can walk on an inclined plan, climbing up and down.		
17.	He can limb up/ climb down on an espalier stair by climbing up.		
18.	He walks on a line drawn on the ground.		
19.	He stands for several seconds on one foot/ in unipodal support.		
20.	He is able to walk in equilibrium on a narrow plan .		

Table 1

(Table 2 represents a table of ADLs evaluation)

Name		*Date of birth*	
Diagnostics		*Date of evaluation*	

Feeding skills/ habits	*Alone*	*Helped*	*Not at all*
He can cut the food with a knife by himself/ alone			
He can pour water in a mug			
He can drink water from a mug			
He can eat sour soups			
He uses cutlery			
He uses the hand			
Hygiene skills/ habits			
He washes his hands			
He brushes his teeth			
He takes a bath			
He washes his face			
Dressing skills / habits			
He puts on/ he takes off the T- shirt, the blouse, the thick shirt			
He puts on/ he takes off the trousers			
He puts on/ he takes off socks or slippers			
Utilities			
He opens/ he shuts the door			
He switches on/ he switches off the light			
He rings or he knocks at the door			
He opens/ he shuts drawers			

Table 2

For the people with Down Syndrome we can use a table that includes several motric skills but also a grid of ADLs to help us understand the point we start from. After establishing what knowledge

the child has in motric skills, we can also make a recovery program in the points where he does not do very well.

Following the subjective test which has been performed, we can see that the patient has deficiencies in terms of severe motric skills but also small problems in achieving ADLs.

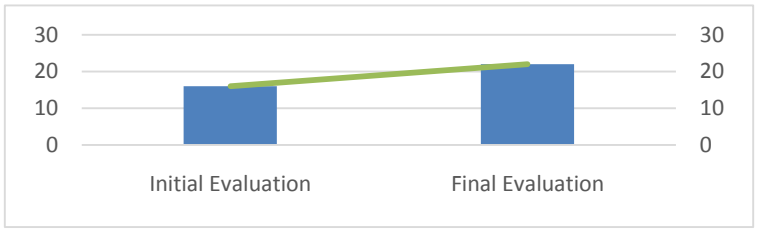
In the second stage of our testing, we will perform objective tests that can provide us with clearer results on the patient's deficiencies for the preparation of tables to help us monitor the patient's evolution .The objective tests will be performed in the following order:

- Specific tests for walking: the “get up and walk” test, the “Tinetti” test and the 2-minute test.
- Specific tests for balance testing: Romberg test, Tinetti test for balance and the time spent on the balance board.
- Specific tests for fine Motricity. The "Balls" test, the "Cutout" test and the ”Pearls "test.

Results and discussions

Specific tests for walking:

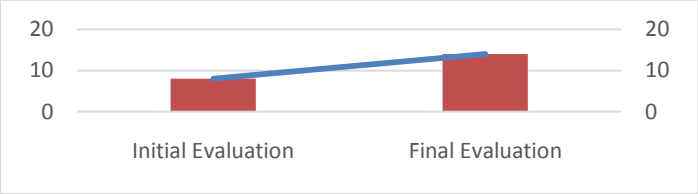
According to the graph no. 1 for the specific tests for walking, the score accumulated by the patient after all the evaluations that he has performed was 22 points out of 24. From these two values we can conclude that our patient has a deficit of 2 points.



Graphic 1 Specific test for walking

Specific tests for balance:

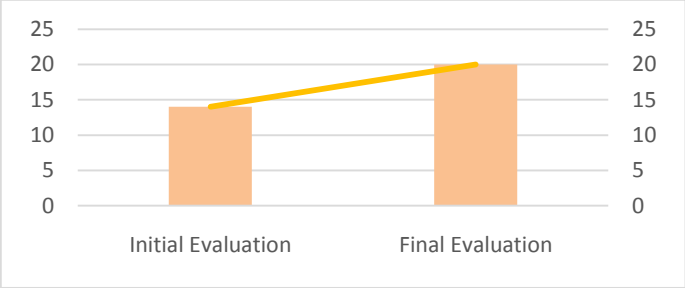
According to the graph no. 2 for the specific tests for balance, the score accumulated by the patient after all the evaluations that he has performed was 14 points out of 24. From these two values we can conclude that our patient has a deficit of 10 points.



Graphic 2 Specific test for balance

Specific tests for fine Motricity:

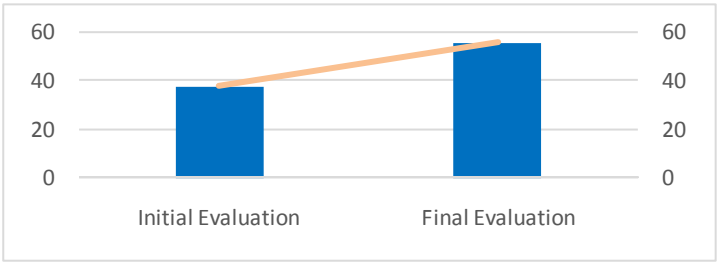
According to the graph no. 3 for the specific tests for fine Motricity, the score accumulated by the patient after all the evaluations he has performed was 20 points out of 24. From these two values we can conclude that our patient has a deficit of 4 points.



Graphic 3 Specific test for fine motricity

From the point of view of carrying out the actual recovery program on the case study, we can conclude that when the patient has a wide range of exercises from which the patient chooses what he wants to perform on that day, the way of working is much easier compared to performing a standard program of pre-set exercises.

Following the graphic representation no. 4, we can conclude that at the initial evaluation our patient obtained a number of 38 points following the program he has performed, at the final evaluation the patient obtained a number of 56 points which means that our patient obtained 18 points more, compared to the initial evaluation. According to the graph, there is an evolution of the patient in this way demonstrating the efficiency of our recovery program.



Graphic 4 The scores at the initial evaluation and final evaluation of the patient

Conclusions

Following this case study we can realize the importance of Kinetotherapy in the lives of people with Down Syndrome. Even if the evolution is not fast, requiring a lot of time to work with the patient, this is not an obstacle during the recovery program. During the recovery program it is recommended not to use specific medical uniforms this can affect the patient's mood, it is advisable to use clothes that are as normal and colorful as possible. Another extremely important factor is that we must establish a friendly relationship with the patient, this thing facilitating the work of carrying out the recovery program, the whole Kinetotherapy program being performed like a game.

Another very important factor in the elaboration of motric routes/ directions and of the exercises it is recommended to use colours as much as possible, this stimulates the patient's attention a lot, but in this way we can easily capture the patient's interest in executing the recovery program.

Before developing a recovery program we need to make a set of specific measurements for ADLs and motric skills so we can know exactly what deficiencies our patient has.

Even if the patients with Down Syndrome at first they cannot perform certain motric skills or motric acts this can be changed only with our help, we must help these patients to lead a life as close to normal as possible, even if this recovery requires years of work in some cases, the results are fabulous and can be achieved only with the help of Kinetotherapy.

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