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COMPARATIVE ASPECTS IN DOWN SYNDROME CHILDREN EVALUATION

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Key words*:* Down syndrome, B.M.S. system, Portage scale.
Resume: Children who suffer from Down syndrome have difficulties gaining speed when walking, equilibrium, force, eye-hand coordination and gross /fine movement, in comparison with the mentally challenged children.

The measuring instrument called "Basic motor skills test of children who suffer form Down syndrome" (BMS) is a test that measures the motor skills of small children with Down syndrome and is based on the theoretical component "Disturbances in the control of the postural system". BMS was verified regarding the psychomotricity.

Applying the BMS method as an evaluation technique and as a fundament for the kinetic treatment, allowed to cutback time that was needed for the neuromotor re-education, because the recovery treatment was based especially on obtaining some kinetic fundamental skills, the others objectives being subsumed to this greater one.

Introduction

Tens of thousands of children suffering from Down syndrome have been studied from the cytogenesis point of view in the last decades. It has become sure that this is the most frequent chromosomal syndrome 1/1700/new born. Then it has become a certainty that there is not one child who has the characteristic malformations of the syndrome and does not have trisomy 21, but in an utterly exceptional way there can be persons who have an extra 21 chromosome but do not present any clinical disorder.

Trisomy 21 is the most common chromosomal anomaly that we encounter in the human pathology. The syndrome is most common in boys, the report being 3 boys to 2 girls.

Recently scientists that take part in the internationally financed Human Genome Project have mapped a succession of approximately 225 genes on the 21 chromosome alone. The research continues in order to find the genes that are linked to the characteristics of people who have Down

syndrome. Once they identify these they may find the biological processes that cause Trisomy 21 thus leading to an intervention or even a cure through gene therapy.

Neurological and motor aspects of children with Down syndrome

Children who suffer from Down syndrome have difficulties gaining speed when walking, equilibrium, force, eye-hand coordination and gross /fine movement, in comparison with the mentally challenged children.

Cowie (1970) has conducted a study on 97 children with Down syndrome and underlined one of the most characteristic neurological and motor symptoms: hypotonia, visible hypotonia, extreme hypotonia. Alongside these, an important role is played by reduced postural tonus that the child manifests. The reduced postural tonus is associated with insufficient co-contractions, inadequate equilibrium reactions, defected proprioceptive feedback of posture and movement and joint hyper mobility.

The motric development of children with Down syndrome is negatively influenced by the disturbances in the postural control. There are problems in adopting and maintaining the posture and in the movements, that's why the qualitative aspects of movement develop inadequately. Considering all these, it is recommended that we stimulate the development of the movement schemata in children with Down syndrome.

Material and method

In our research we have applied the recuperation treatment to 3 children who have been diagnosed with Down syndrome.

Table no. 1. The structure of the experimental group

No.	Name	Date of birth	Initial evaluation	Final evaluation
1.	A.N.	15.10.2006	15.02.2008	15.05.2008
2.	G.L.	21.12.2006	15.02.2008	15.05.2008
3.	M.I.	06.08.2006	15.02.2008	15.05.2008

We have unfolded the experimental action in the physical therapy office of from "Daniel" Neuromotor Recuperation Centre that pertains to the Association for Supporting the Neuromotor Handicapped Children Bacau.

The duration of the physical therapy session for each child was between 30 and 50 minutes.

We have conducted the sessions according to the gravity of the diagnosis form a minimum of 2 sessions/week into 3 sessions/week.

The measuring instrument called "Basic motor skills test of children who suffer form Down syndrome" (BMS) is a test that measures the motor skills of small children with Down syndrome and is based on the theoretical component "Disturbances in the control of the postural system". BMS was verified regarding the psychomotricity.

With this test we can measure the level of postural control of the motor behaviour in the period of basic motor skills development. B.M.S. may be used from the moment that voluntary movement appear until the period when orthostatic behaviour and walking are possible. Generally, the test may be used from three months to three years.

B.M.S. measures the level of postural control for 15 basis motor skills. The skills have been selected from a variety of obvious postural disturbances regarding the postural control, representing the motor problems of the children with Down syndrome in the period of development of basic motor skills. The 15 skills are mentioned in the order that they develop, appear, forming together a growing scale.

In order to validate the theoretical and practical efficiency of the BMS method that we apply mainly on children with Down syndrome, we have utilized for comparison the neurological and motor aspects of the Portage scale for 1 and 2 years (items 46 to 79).

Results

Taking under consideration the fact that the evaluation, for each subject in particular, with the two scales, was very ample, I will present the evolution and the results for the first subject in the experimental group.

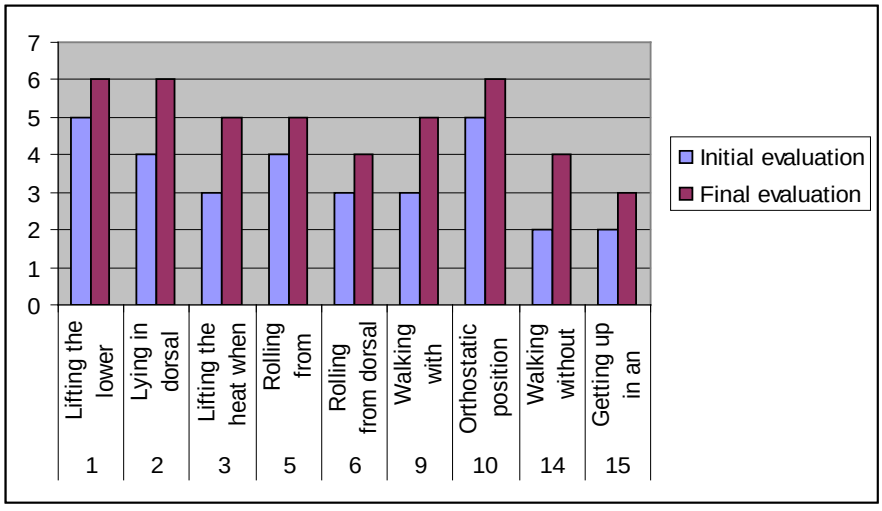
For subject ***A.N.***, the recuperation treatment led to a favourable evolution of the aspects that we tried to emboss, fact demonstrated by the improvement of the value for each item in the two scales, as presented in Table 2. (for B.M.S.) And Table 3 (for Portage scale).

In B.M.S. system we may notice that with the exception of item 4, 7, 8, 11, 12 and 13, who presented the same value as in the initial evaluation, the other items showed an increase in value with at least one point and more (item 3, 9 and 14). For the items with positive evolution we have presented graphic no. 1.

Into what regards Portage scale for which we have selected 7 representative items, we have found a strong evidence for a very good evolution. This is supported by the fact that at the final evaluation we have obtained the maximum value. (Graphic no. 2).

Table no. 2. Dynamic evolution in the B.M.S. items for subject A.N.

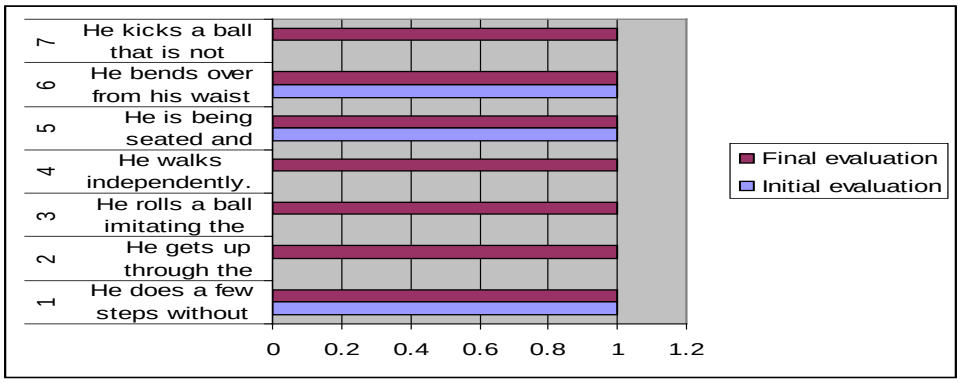
No.	Motor basic skill	Initial evaluation	Final evaluation
1	Lifting the lower members in dorsal decubitus.	5	6
2	Lying in dorsal decubitus.	4	6
3	Lifting the heat when lying in dorsal decubitus.	3	5
4	Standing on the elbows when in ventral decubitus.	4	4
5	Rolling from ventral decubitus to dorsal decubitus.	4	5
6	Rolling from dorsal decubitus to ventral decubitus.	3	4
7	Sitting.	4	4
8	Walking forward on the floor.	4	4
9	Walking with support.	3	5
10	Orthostatic position with support.	5	6
11	Getting up in an orthostatic position with support.	4	4
12	Orthostatic position without support.	4	4
13	Being seated	2	2
14	Walking without support.	2	4
15	Getting up in an orthostatic position without support.	2	3



Graphic no. 1. The item evolution dynamics in B.M.S. method in subject A.N.

Table no. 3. Evolution in the Protage scale items in subject A.N.

Nr. crt.	Item	Initial evaluation	Final evaluation
1	He does a few steps without help.	1	1
2	He gets up through the stairs in his knees.	0	1
3	He rolls a ball imitating the adult.	0	1
4	He walks independently.	0	1
5	He is being seated and getting up from this position.	1	1
6	He bends over from his waist in order to lift objects.	1	1
7	He kicks a ball that is not moving.	0	1



Graphic no. 2. The item evolution dynamics in Portage scale in subject A.N.

Conclusions

Considering the theoretical premises that represent the fundament of our work we may argue that our research hypotheses have confirmed:

1. Using motric and somatic-functional examinations through B.M.S. and Portage scale, we have found motric underdevelopment in 3 children with Down syndrome who were a part of the experimental group.

2. Through B.M.S. method (motor development and intervention) we wanted the children with Down syndrome to maintain themselves into the stages of normal development. As a result of our experiment, we found that children with Down syndrome may recover the motor deficit through physical therapy as the main agent of motric education and re-

education. Through B.M.S. we have shortened the time that it would normally take to recover the deficit because the treatment was based especially on obtaining a fundamental motor skill, the other objectives being subsumed.

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Titlu: Aspecte comparative ale evaluării copiilor cu sindromul Down**.**
Cuvinte cheie: sindrom Down, sistemul B.M.S., scara Portage.
Rezumat: Copiii cu sindrom Down dobândesc greu viteza la mers, echilibrul, forţa, coordonarea ochi-mână şi abilităţile motrice grosiere şi fine, comparativ cu copiii cu deficienţă mintală.

Instrumentul de măsură denumit „Testul deprinderi motorii de bază ale copiilor cu sindrom Down” (B.M.S.) este un test al deprinderilor motorii special proiectat pentru a testa copiii mici cu sindrom Down şi se bazează pe componenta teoretică „Perturbări în sistemul controlului postural”. B.M.S. a fost verificat din punct de vedere psihomotric.

Aplicarea metodei B.M.S. ca metodă de evaluare şi de fundamentare a tratamentului kinetic, a permis scurtarea timpului aferent reeducării neuromotorii, deoarece tratamentul recuperator s-a centrat mai ales pe obţinerea unor abilităţi motrice fundamentale, celelalte obiective fiind subsumate acestora.

Titre: Aspects comparatif des enfants dans le syndrome de down evaluation.
Mots - clé: Le syndrome de Down, le système BMS, l'échelle Portage.
Résumé : Les enfants qui souffrent du syndrome de Down ont des difficultés à prendre de la vitesse pendant la marche, équilibre, force, coordination œil-main et brut / beau mouvement, en comparaison avec les enfants handicapés mentaux. L’instrument de mesure appelé „moteur

de base de test des compétences des enfants qui souffrent du syndrome de Down forme" (BMS) est un test qui mesure les habiletés motrices des enfants avec le syndrome de Down et est basé sur la composante théorique „ perturbations dans le contrôle du système postural ". BMS a été vérifiée en ce qui concerne la psychomotricité. En appliquant la méthode BMS comme une technique d'évaluation et en tant que fondement pour le traitement cinétique, a permis de compressions de temps qui était nécessaire pour la ré-éducation neuromotrice, parce que le traitement de récupération a été fondée en particulier sur l'obtention de certaines compétences cinétique fondamentaux, les objectifs autres étant subsumé à cette plus grande.