107 - MOTOR EVALUATION AND INTERVENTION IN DOWN SYNDROME

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INTRODUCTION

In human development happen several modifications, from the birth to adult age, denoting a constant biological and psychological evolution resulting from environmental and personal factors, which involve nutritional, genetic, physical and pshychosociais aspects (PAPALIA and OLDS, 2000).

In agreement with Rosa Neto (2002, p.11), the children's motor possibilities develop in harmoniousness with their age and they get to be more and more varied, complete and complex. About child with special need's development, Lorenzini (2002) emphasizes that some abilities not always happen in a natural way, having the need of a specific intervention, since the birth to adult age. A good control motor promotes the atmosphere exploration starting from concrete experiences, which will subsidize the child's intellectual development. It is known, through different studies and researches (ROSA NETO, 1996; LORENZINI, 2002), that children with some specific need - physics or mental - present a later motor and congitive functions development, what doesn't mean that cannot reach a normality degree in other aspects of development.

For Lorenzini (2002), associated disturbances in children with specific needs can interfere in their motor acquisition, turning them vulnerable to learning. The author also emphasizes the importance of constant "supply of experiences for the children, making possible satisfactory conditions for their development."

Fonseca (1983) says that it's possible to improve deficient motor possibilities with full pshychomotor stimulation. Although children with special needs present specific difficulties, if there is a combination among affective, social, environmental and physical stimulos, all of them, inside of their limitations, will get to develop in a healthy and natural way (TECKLIN, 2002).

Decline of some researches thave been accomplished in that area (FONSECA, 1983, ROSA NETO, 1996; SÁNCHES, 2003; GLUE and GLUE, 2003; ROSE GRANDSON, 2004), a few of propose and evaluate forms and pshychomotor intervention for individuals with Down syndrome. Trying to promote subsidies for an evaluation and pshychomotor intervention for children and adolescents with Down syndrome, to optimize their global development, the study aimed to evaluate the motor and biopsychosocial profile from students with Down syndrome aged 04 to 14 years, from Special School "Caminho da Esperança" (Palhoça/SC) and to analyze a specific pshychomotor intervention program (PIPE) influence in one of those individuals.

MATERIALS AND METHODS

The present study was realized since April to November of 2004, in Palhoça city, State of Santa Catarina, and involved all the scholars from Special School "Caminho da Esperança" (Palhoça/SC) with clinical diagnosis of Down syndrome, with ages between 04 and 14 years, both gender, totaling 09 individuals (05 male and 04 female). The psychomotor intervention (case study) involved a 7 year-old child, female, selected by the days of attendance in the school (Monday and Thursday).

The instruments used were: Motor Development Scale (EDM), developed by Rosa Neto (2002); Biopshychosocial Questionaire, elaborated by Rosa Neto and Almeida (2004) and some data of school handbooks, supplied by the school; Anecdotary, to register all of information acquired in data collection period, involving teachers and family.

The intervention used the Specific Pshychomotor Intervention Program (PIPE), developed by Rosa Neto and Almeida (2004), according to Figure 1, based in Pshychomotor Therapy (FALKENBACH, 2004).

Seq.	Área for development	Objectives	Proposal activities
1	Fine Motricity	Eye-hand	Fitting Games, blocks for colors, drawing and painting.
2	Fine Motricity	Dexterity	Nipping small objects, to pass thread in the screen, to hole points in isopor
3	Global Motricity	Coordenation	Circuit with obstacles (bench, elastic, rope, plans, cones).
4	Global Motricity	Body control	Music games (statue), Alive-dead, Games with balls
5	Balance	Stattoc posture	Different static positions, with several materials (helpness or no)
6	Balance	Dynamic posture	Games of level change (to arise and to go down, to run and to stop)
7	Corporal Outline	Postural imitation	Games in front of mirror, relationship with therapist, parents and friends
8	Corporal Outline	quickness	sung Games, pedagogic activities with paper, paint and geometric illustrations
9	Space Organization	Space perception	Puzzle games, Exploring scholar environment
10	Space Organization	sensorial	Handling different materials and to classify them (big/little, thick/thin, sloppy/stony)
11	Temporary Organization	linguage	to Stimulate the composition of sentences, to sing
12	Temporary Organization	Temporals structures	Games with music (rhythm), to beat palms and feet (intensity and different stops)
13	Laterality	hands	fitting Games, throw, didactic-pedagogic activities
14	Laterality	feet	Game with balls, saci-perere, circuits
15	Laterality	eyes	eyes Mask, binocular, magic eye

For data statistical treatment was used EPI INFO 2000 - version 3.2.2 software (CDC, 2004), looking for descriptive analysis through the average, medium, minimum value, maximum value, variance and standard deviation, besides the graphs of motor profile (ROSA NETO, 2002). For case study data analysis was used pre and post test comparative study, using comparative graphs. The research is characterized as descriptive, in a case study type (GIL, 1995).

RESULTS

1. Sample Motor and Biopshychosocial evaluation (N=9)

Biopshychosocial Data: 67% of the children were born of normal childbirth and 33% of cesarean; 67% were born at term, 22% preterm and 11% post-term; 45% represent births after the 3rd son. About cariotipics, 56% have 21 trissomy, 44%

didn't accomplish the exam. About education, 22% study in Childhood Education and 78% in the Fundamental Teaching (just one child is in inferior or inadequate class).

Family data: Most of mothers (67%) had aged to 40 years in his son's birth and most of fathers (45%) had from 41 to 45 years old. About family education, most of mothers (56%) studied from 1st to 4th series and most of fathers (67%) studied from 5th to 8th series. At matrimonial situation, 78% are married and 22% divorce.

Handbooks Data: The hipotonia degree in 56% from evaluated students was considered light; 33% moderate and 11% severe; about global evolution, 33% presented slow evolution; 45% satisfactory and 22% quite satisfactory.

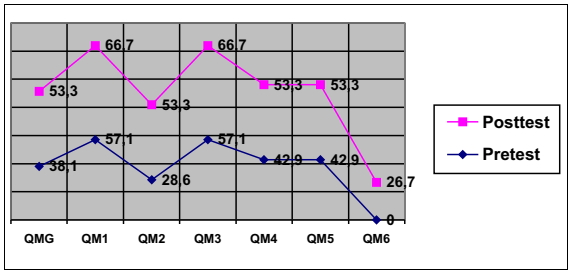
Motor development: All of students presented "very inferior" level of classification, according to "EDM", and the areas with larger difficulty were global motricity and language (Table 1). Laterality: crusade (45%); indefinite (33%); right complete (22%).

TABLE 1: Sample motor development.

Variables	Average	Variance	Standar Deviation	Minimum value	Maximum value	Medium
Chronological age	111,5	15,5	3,9	59,0	167,0	103,0
Motor ages						
General motor age (IMG)	44,0	26,1	1,6	24,0	70,0	42,0
Fine motricity (IM1))	53,3	54,4	2,3	24,0	96,0	48,0
Global Motricity (IM2)	36,0	46,8	2,2	0	60,0	24,0
Balance (IM3)	46,7	34,0	1,8	24,0	84,0	48,0
Corporal Outline (IM4)	54,7	36,4	1,9	36,0	84,0	60,0
Space Organization (IM5)	52,0	32,4	1,8	24,0	84,0	60,0
Temporany Organization (IM6)	21,3	64,0	2,5	0	72,0	24,0
Motor Quotients						
General motor Quotient (QMG)	40,0	4,4	0,7	29,0	49,0	41,0
Fine Motricity (QM1)	46,4	8,5	0,9	31,0	59,0	43,0
Global Motricity (QM2)	35,7	42,6	2,0	0	71,0	39,0
Balance (QM3)	42,5	11,5	1,1	29,0	57,0	41,0
Corporal Outline (QM4)	50,0	12,2	1,1	35,0	71,0	47,0
Space Organization (QM5)	48,2	19,5	1,4	29,0	71,0	50,0
Temporany Organization and language (QM6)	16,9	32,5	1,8	0	43,0	16,0

2. Motor intervention (case study):

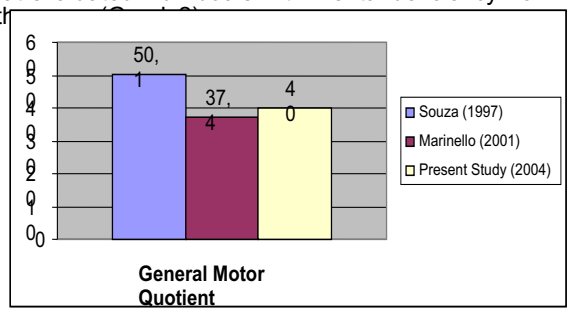
Improvement was observed on child's general motor development, indeed maintaining in "very inferior" classification for "EDM" in all of areas. The moor areas that her obtained better results were global motricity and language, as presented in Graph 1. Negative age of 52 months (in the pretest) passed for 42 months (in post test), acting 10 months of motor evolution.



GRAPH 1: Case study motor profile comparation.

DISCUSSION

The results of the present study agree with MARINELLO'S study (2001), that found "very inferior" classification on motor quotient (EDM) when evaluating children from 6 to 13 years old with Down syndrome from APAE of Tubarão/SC and with SOUZA'S research (1997), that evaluated individuals with mental deficiency from APAE of Florianópolis/SC and also found levels very inferior in most of th



GRAPH 2: Research comparation (QMG).

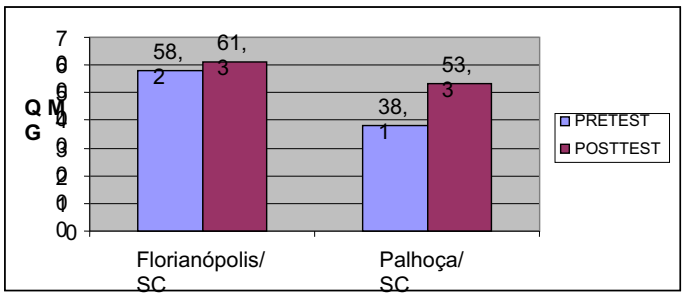
The larger difficulty areas, in present research, were language (QM=16,9) and global motricity (QM=35,7). Souza's (1997) and Marinello's researches (2001) confirm the largest deficit in language area. One justification for these results is the muscular hipotonic influence in children with Down syndrome, what interferes directly on language, caused by tongue and face muscle accessory hipotonic.

About laterality, the 45%found index of the individuals with crusade laterality and 33% with indefinite laterality can represent that great part of individuals with Down syndrome presents laterality deviations. Souza (1997) found 30% of indefinite laterality and 10% crusade in students with mental deficiency. Marinello (2001) detaches 15% of indefinite laterality in children with Down syndrome.

In case study analysis, it was observed that in all of areas there was a progression of child's motor development. The areas that obtained the best results were global motricity (QM2) and language and temporary organization (QM6).

A research accomplished in Florianópolis/SC, by Rosa Neto and collaborators (2004), with methodology similar to

adopted in this study (30 sessions), analyzed the results pre and posttest in 10 schoolars with learning disturbances, following Graph 3:



GRAPH 3: Pré and Posttest research caomparation.

Besides the quantitative analysis, we can emphasize some significant qualitative earnings, referred by child's family and teachers, like improvement in socialization, contact and respect for the friends, limits and participation in the classes. These information coincide with Lorenzini (2002) considerations that the game is an instrument that gives for children necessary experience to their sensorial, motor, perceptual, cognitive and cultural development.

On fine motricity, the child's motor quotient developed from 57,1 to 66,7 and her "started to demonstrate larger interest for fitting games, of larger difficulties and pedagogic activities in classroom that before resisted to do, caused by motor difficulty" (Source: anecdotary from school-teacher). On global motricity, her motor quotient developed from 28,6 to 53,3, being one of the best results of posttest. I.S.C. "lost the fear of accomplishing activities how to arise and to go down stairways running, to walk and to run for circuits, to jump freely and to play ball with the friends" (Source: anecdotary from Physical Education teacher).

About balance, the evolution also happened (the motor quotient passed from 57,1 to 66,7), with reference of improvements by physical education teacher. A factor that contemplated as qualitative earnings was the " anxiety and cessation reduction in concentration activities and balance" (Source: anecdotary from Physical Education teacher).

Observing her participation in classroom activities, I.S.C. demonstrated great interest for activities of corporal outline (recognition of her own body), getting to "try to teach the other friends" (Source: anecdotary from school-teacher). That earnings was fundamental for her, with growth of 42,9 for 53,3 of her motor quotient.

About space organization, I.S.C. "started to perceive and to feel the other friends and objects of the room with larger precision and care" (Source: anecdotary from school-teacher). The teacher also says that "before this, I.S.C. seemed to live in moon world, because frequently she missed the chair to sit down, beat in the walls when moving for the classroom and she was always bumpping into friends, mainly in free moments (playtime) ". Her space organization motor quotient increased from 42,9 to 53,3.

About language area, on first evaluation I.S.C. didn't accomplish the first test of EDM for that motor area ("very inferior" delay). On second evaluation, I.S.C. accomplished that test, and demonstrated to be in growth and learning communication process. She passed of pre-language state for the small language that Rosa Neto (2002) define as a period that occure the first "word-sentence" combinations. Girl's mother got to affirm that "she is trying to pronounce the words better (Source: anecdotary from mother).

In Moraes' and Copetti study (2002), that evaluated the level of motör maturation in 11 children from 09 to 14 years with Down syndrome from Blumenau/SC, the authors concluded that those children seem to have potentialities to develop some mature movements, however, lack or scarce stimulation hold back them.

Pshychomotricity benefits on children's motor development were already evidenced by Nacarato (2001), when affirming that the work in pshychomotricity privileges the physical action, associate for mental area, when the child learn to listen, to interpret, to imagine, to transform the idea in action, and reach concrete think, what is indispensable for formal learning; in agreement with Moraes and Coppetti (2002), the execution of appropriate motor activities prevents the apathy and the obesity from these chidren, and they have stimulated their interest and curiosity.

The research showed the children with Down syndrome motior evaluation importance, besides detaching the positive result of specific pshychomotor intervention, both in motor and social aspect.

It was suggests, based on found data, that a research with techniques of larger sampling is necessary, aiming at the determination of the general motor and biopshychosocial profile from individuals with Down syndrome.

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EVALUATION AND INTERVENTION IN DOWN SYNDROME

ABSTRACT

The aim of this study was to verify the motor and biopshychosocial profile from 09 schoolars with Down syndrome, aged 04 to 14 years and to analyze the influence of a specific pshychomotor intervention program in one of those children. For motor evaluation, Motor Development Scale was used - EDM (ROSA NETO, 2002) that evaluates the areas: fine motricity, global motricity, balance, corporal outline, space organization, temporary organization / language and laterality. The bipshychosocial evaluation used a questionnaire elaborated by Rosa Neto and Almeida (2004). In intervention process were used activities for each area of motor development, according to specific program, being interventions followed up daily (SÁNCHES, 2003), accomplished with a 7 year-old child, for 4 months (30 sessions). For data analysis was used the software EPI INFO 2000 (CDC, 2004), the motor profile graphs (ROSA NETO, 2002) and an anecdotary. About sample motor profiles (N=9), 100% presented a classification level "very inferior", especially in global motricidade and language areas. In the laterality, most (78%) presented crusade or indefinite, what could suggest deviations. About the intervention (case study), quantitative and qualitative earnings were observed in all of motor areas. By EDM, the child presented 10 months of motor earnings. The parents and techers' depositions confirm the positive result.

Key-Word: Motor evaluation. Intervention. Down Syndrome.

ÉVALUATION ET INTERVENTION DANS LE SYNDROME DE DOWN

RÉSUMÉ

L'objectif de cette recherche a été de vérifier le profil moteur et biopsychosocial de 09 élèves avec le syndrome de Down de 04 a 14 ans et d'analyser l'influence d'un programme d'intervention psychomotrice spécifique dans un de ces enfants. Pour l'évaluation motrice, l'Échelle de Developpement Moteur EDM - a été employée (ROSA NETO, 2002). Celle-ci évalue les domaines: motricité fine, motricité globale, équilibre, projet corporel, organisation de l'espace, organisation séculaire, langage et adresse pour employer le bon côté ou le côté gauche. L'évaluation biopsychosocial a employé un questionnaire élaboré par Rosa Neto et Almeida (2004). Dans le processus d'intervention les activités appropriées pour chaque domaine du développement de la motricité ont été employées, selon programme spécifique, étant réalisé l'accompagnement quotidien des interventions (SÁNCHES, 2003), exécutées avec un enfant de 7 ans, pendant 4 mois (30 sessions). Pour l'analyse des données on a utilisé le logiciel EPI INFO 2000 (CDC, 2004), les graphiques du profil de la motricité (ROSA NETO, 2002) et un journal d'observation. En ce qui concerne les profils motrices de l'échantillon (N=9), 100% a présenté un niveau de classification "assez inférieure", particulièrement dans la motricité globale et dans le langage. Dans l'adresse pour employer le bon côté ou le côté gauche, la majorité (78%) s'est présentée croisée ou indéfinie, pouvant suggérer des déviations. En ce qui concerne les bénéfices d'intervention (étude de cas), des valeurs quantitatives et qualitatives positives ont été observées dans tous les domaines de motricité. Par l'EDM, l'enfant il a présenté 10 mois de bénéfice de motricité. Les témoignages des professeurs et des familiers ont confirmé le résultat positif.

Mot-cléf: Évaluation motrice. Intervention. Syndrome de Down.

VALORACIÓN Y INTERVENCIÓN MOTORA EN EL SÍNDROME DE DOWN

RESUMEN

El objetivo de esta investigación fue verificar el perfil de motor y biopsicosocial de 09 estudiantes con síndrome de Down de 04 a 14 años de edad y analizar la influencia de un programa de intervención psicomotora específico en uno de estos niños. Para la valoración, se usó el Escala del Desarrollo Motor - EDM (ROSA NETO, 2002), a qual valora las áreas: motricidad fina, motricidad global, equilibrio, esquema corporal, organización espacial, lorganización temporal / lenguage y lateralidad. Los datos biopsicosociales fueron valorados con un cuestionario elaborado por Rosa Neto y Almeida (2004). En proceso de la intervención se usaron actividades propias para cada área del desarrollo motor, según el programa específico, siendo registrada las actividades diaria cumplida en las intervenciones (SÁNCHES, 2003), hechas con un niño de 7 años, durante 4 meses (30 sesiones). Para el análisis de los datos se usó el software EPI INFO 2000 (CDC, 2004), los gráficos de perfil de motor (ROSA NETO, 2002) y un anedotario. Con respecto a los perfiles motores de la muestra (N=9), 100% presentaron un nivel de clasificación "muy inferior", sobre todo en el motricidade global e lenguage. En lateralidad, la mayoría (78%) presentó en cruzada o indefinido, podría hacer pensar en desviaciones. Con respecto a la intervención (estudio de caso), se observaron las gaños cuantitativos y cualitativos en todas las áreas motoras. Por EDM, el niño presentó 10 meses de gaños motores. Las deposiciones de los padres y maestros confirman el resultado positivo.

Palabras clave: valoración motora, intervención, síndrome de Down.

AVALIAçãO E INTERVENçãO MOTORA NA SíNDROME DE DOWN

RESUMO

O objetivo desta pesquisa foi verificar o perfil motor e biopsicossocial de 09 escolares com síndrome de Down de 04 a 14 anos e analisar a influência de um programa de intervenção psicomotora específica em uma dessas crianças. Para a avaliação motora, foi utilizada a Escala de Desenvolvimento Motor EDM (ROSA NETO, 2002) que avalia as áreas: motricidade fina, motricidade global, equilíbrio, esquema corporal, organização espacial, organização temporal / linguagem e lateralidade. A avaliação biopsicossocial utilizou um questionário elaborado por Rosa Neto e Almeida (2004). No processo de intervenção foram utilizadas atividades próprias para cada área do desenvolvimento motor, conforme programa específico, sendo realizado acompanhamento diário das intervenções (SÁNCHES, 2003), realizadas com uma criança de 7 anos, durante 4 meses (30 sessões). Para a análise dos dados foi utilizado o software EPI INFO 2000 (CDC, 2004), os gráficos de perfil motor (ROSA NETO, 2002) e um anedotário. Com relação aos perfis motores da amostra (N=9), 100% apresentou um nível de classificação "*muito inferior*", especialmente na *motricidade global* e *linguagem*. Na *lateralidade*, a maioria (78%) apresentou cruzada ou indefinida, podendo sugerir desvios. Com relação à intervenção (estudo de caso), observaram-se ganhos quantitativos e qualitativos em todas as áreas motoras. Pela EDM, a criança apresentou 10 meses de ganho motor. Os depoimentos de familiares e professores confirmam o resultado positivo.

Palavras-chave: Avaliação motora. Intervenção. Síndrome de Down.