27 - GROSS MOTOR FUNCTION IN CHILDREN WITH CEREBRAL PALSY ENROLLED IN PUBLIC REGULATE SCHOOL OF FLORIANÓPOLIS/SC, BRAZIL

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Introduction

Although a lot she have been discussing about the real school inclusion apprenticeship, the increment on presence of students with Specific Education Needs (SENs) in the regular teaching it has been demanding new conducts from professional who work with education, to promote the identification of specific needs and consequent decisions and orientations that promove genuine inclusion, with the due respect to the individuality of each one. Than, the professional who works with School Physical Education needs also go on their performance.

The Cerebral Palsy (CP) is defined as a form of no evolutive chronic encephalopathy initiate in the first childhood, that interferes in the child's neuromotor maturation, promoting disorders in tonus, movement, posture and sensorial integration (ROTTA, 2000), associated or not to cognitive impairment. Rosenbaum et al. (2002) reveal the incidence of CP as 2 to 2,5 cases for each 1000 born alive, statistics that Mancini et al. (2002) affirm to arrive to 7/1000 in developing countries, with 30.000 to 40.000 new cases a year in Brazil.

Considering the consequences of the Cerebral Palsy on structural and functional Central Nervous System maturation, is evidenced its influence on the motricity evolution since childhood. When approaches no appropriate are made, the child with CP can develop abnormal patterns of posture and movement, contractures and deformities that will hinder their neuromotor recovery (BARTLETT; PALISANO, 2002) and, possibly, its will influence negatively their quality of life.

For Bobath and Bobath (1978), the installation of abnormal postural patterns and the difficulty in modifying them after a time occur because CP children give function for abnormal movement, considering that their voluntary movement always tends to reinforce the pathological dominant pattern, adapting for daily possibilities.

About practice of Physical Education School, such characteristic CP needs to be account, in order to provide the best possibilities of abnormal patterns inhibition and reinforcement of normal patterns of movement, contributing for their neuromotor development. That task, obviously, just be accomplished with the theoretical-practical base about Cerebral Palsy, including the knowledge about the children's motor function.

Than, this work aimed evaluates the gross motor function from CP children enrolled in the regular teaching of Florianópolis/SC, to promote larger subsidies to their inclusion in the School Physical Education.

Method

Characterized as descriptive-diagnóstics, of transverse type (CERVO; BERVIAN, 1996), this work had as population children with special education needs, with Cerebral Palsy, enrolled in public schools from regular net of teaching of Florianópolis, in the school year of 2005.

The study group was delineated intentionally, based in listing supplied by the Municipal Education Office from Florianópolis/SC, following inclusion criteria: the parents' authorization for the participation in the study; medical diagnosis of cerebral palsy; age group 4 to 15 years; and assiduous frequency to the classes, with participation in School Physical Education classes.

The obtained measures refer for Gross Motor Function and pregnancy, perinatal and neonatal period antecedents, of the children from the study, sice February to May of 2005.

Gross Motor Function was evaluated with the observation instrument Gross Motor Function Measure version 88 (GMFM-88), developed and standardized by Russell et al. (1993) to produce an index of gross motor function especially for children with CP or with cerebral damages. Such scale is composed of 88 items to be observed, divided in 5 dimensions: 1) Lying and Rolling; 2) Sitting; 3) Crawling and Kneeling; 4) Standing; and 5) Wlaking, Running and Jumping, the ones which together allow the verification of the Total Score, which presents a global vision of the Gross Motor Function. In agreement with Monteiro & Darbar (2004), GMFM has releases use in the developed countries, in the great rehabilitation centers and for Neuropediatrics professionals. Its use in this study followed the constant norms in specific manual.

For the verification of historical of pregnancy, perinatal and neonatal period was used a Form of Antecedents, with questions answered by the parents or responsible for the children. Such form is divided in 6 parts, which are: Data of Identification; Pregnancy Antecedents; Perinatal History; Neonatal Period; Rehabilitation; and Use of Orthoses.

The data were stored in database created in the software Epi-Info version 3.2.2 (EPI INFO 2000), and analyzed through the Descriptive Statistics, being presented in tables and graph in the percentis functions, average, medium and standart deviation.

Results:

During the period destined to the data collection, 22 individuals participated in the study, chosen from listing supplied by the Municipal Education Office from Florianópolis/SC.

About appraised subjects, there was majority female (63,3%, n=14). Medium age was 7,9 years, with larger medium value for male (8,7 years). About 40% of the cases had diagnosis of CP ended during the first year of life, percentile reaching 68,2%(n=15) until the second year. In an alarming pattern, 27,3% (n=6) were just diagnosed to 5 years of age. About CP classification, the Table 1 presents frequencies and percentile in relation to gender:

TABLE 1. CP Classification by Gender

KIND OF CP	GENDER			
	Female		Male	
	Freq	%	Freq	%
Quadriparesia	5	35,7%	3	37,5%
Quadriplegia	0	0,0%	2	25,0%
Diparesia	4	28,6%	1	12,5%
Hemiparesia	2	14,3%	0	0,0%
Ataxia	2	14,3%	1	12,5%
Coreo-Atetosis	0	0,0%	1	12,5%
Quadriparesia with atetosis component	1	7,1%	0	0,0%
Total	14	100,0%	8	100,0%

It is possible to affirm, with base in Table 1, that most of children presents diagnosis of CP of quadriparesia type, with 08 cases (36,4%).

In the observation of the other items from Form of Antecedents, it was verified that most of the individuals was born for normal childbirth (71,4%), with 19% submitted to Cesarean and 9% (n=2) born of normal childbirth attended by forceps. Prematurity had frequency of 10 (47,6%) of the individuals (Gestational Age below 37 weeks, PITREZ; PITREZ, 1998), of the which 4 (19% from total) were micropreterms (Gestational Age smaller or equal to 32 weeks, NESTLÉ; 2002). These, 3 had quadriparesia and 1 diparesia. About birth weight, 50% (n=10, 20 respondents) they were characterized as Low Birth Weight (below 2500g), and half of these presented Very Low Birth Weight (smaller than1500g).

Perinatal asphyxia was the larger report occurrence, present in 9 (42,8%) of the individuals of the study; of these, neonatal ressucitation was necessary in 05 cases. Neonatal ressucitation was verified, also, in 04 cases without history of any neonatal occurrence.

As for the rehabilitation report, the medium age at the beginning had great width (standart deviation = 22,1 months), with medium of 8,5 months, and modal value fixed in 6 months. The medium of the total time of physical therapy intervention was 78 months, with great standart deviation (87,9 months), this obviously was related to the variation of the chronological age of the studied subjects. In orthoses use, 70% told to be making use or already to have used, being especially orthoses of ankle-foot and cubitus-palmar type, suitable for minimization of tonic alteration.

Analyzing the results of the Gross Motor evaluation, Table 2 reveal descriptive values of the scores obtained in the respective dimensions, in relation to the kind of Cerebral Palsy.

TABLE 2. Gross Motor Function and CP Classification

	DIMENSIONS *				
	A	B	C	D	E
KIND OF CP	Min/ Max *Med/ s.d.*	Min / Max *Med / s.d.*	Min / Max *Med / s.d.*	Min / Max *Med / s.d.*	Min / Max *Med / s.d.*
Quadriparesia (n=8)	59,0/96,0 *88,0/12,3*	16,6 / 100 *50,8 / 19,1*	0 / 45,2 *9,5 / 14,1*	0 / 84,6 *44,8 / 43,8*	0 / 0 *0 / 0*
Quadriplegia (n=2)	7,8 / 100 *53,9/65,1*	1,6 / 70,0 *35,8 / 42,3*	0 / 7,0 *3,5 / 4,9*	0 / 0 *0 / 0*	0 / 0 *0 / 0*
Diparesia (n=5)	59,0/ 100 *100/ 18,0*	23,0 / 100 *93,0 / 32,2*	0 / 97,6 *73,8 / 42,6*	0 / 89,7 *71,8 / 63,4*	0 / 82,0 *56,9 / 38,3*
Hemiparesia (n=2)	72,5/98,0 *85,2/18,0*	88,0 / 98,3 *93,1 / 7,3*	40,4 / 92,8 *66,6 / 37,0*	77,0 / 84,7 *83,4 / 9,0*	44,0 / 88,9 *66,4 / 31,7*
Ataxia (n=3)	100 / 100 *100 / 0*	100 / 100 *100 / 0*	92,8 / 100 *100 / 4,1*	38,4 / 100 *89,7 / 33,0*	75,0 / 79,1 *76,4 / 2,0*
Coreo-Atetosis (n=1)	15,7/15,7 *15,7 / 0*	8,3 / 8,3 *8,3 / 0*	0 / 0 *0 / 0*	0 / 0 *0 / 0*	0 / 0 *0 / 0*
Quadriparesia with Ate tosis component (n=1)	84,3/84,3 *84,3/84,3*	41,6 / 41,6 *41,6 / 0*	2,3 / 2,3 *2,3 / 2,3*	0 / 0 *0 / 0*	0 / 0 *0 / 0*

*** Values in % of Gross Motor Function**

It's possible to perceive larger percentages of gross motor function in cases of ataxia, following for hemiparesia and diparesia, respectively, with larger and growing impairment in the cases of Quadriparesia, Quadriplegia and in the case of isolated Coreo-atetosis and associated to Quadriparesia.

Analyzing Gross Motor Total Score by gender, superior profile can be observed for female (Figure 1). Standart deviation was similar for two groups (33,6% for female and 34,2% for male), and difference wasn't statistically significant (p=0,29 on t Test).

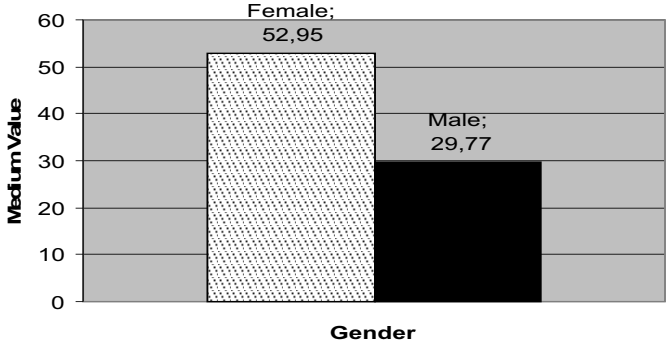

FIGURE 1. Total Score medium value (%) by Gender

Discussion:

The diagnosis age was in the first year for 40% to and of 68,2% until the second year, being inside of the average of age; diagnosis just around 5 years old was caused by fact that the child present small deficit, where it had only been observed with patterns more developed.

Bringas-Grande et al. (2002), comment on that CP diagnosis is supplied in aged 18 to 24 months, but in their study they found an interval from 1 to 456 months. Early diagnose can be promoting for the routine consultations, because the parents take their children to development follow up.

About prevalence of the preterm birth, authors protrude the importance of gestational age and the appropriate birth weight, what could avoid neurological damage into birth. Gestational age precocity can bring immaturity of the Central Nervous system and of other organs. Frequency of prematurity (n= 10, 47,6%) can demonstrate strong evidence for CP prevalence (BRINGAS-GRANDE et al. 2002).

In relation for birth weight, 50% were characterized as Low Birth Weight (below 2500g), and half of these presented Very Low Birth Weight (smaller of 1500g). In Muzaber and Schapira (1998) study, 40% of the children had prematurity and low birth weight. They comment that the child's risk to born with CP is 20 times increased when birth weight is 1500 grams, and that increases when the birth weight is smaller.

Perinatal asphyxia was more frequent ocurrence, present in the report of 9 (42,8%) of the individuals from this study. For Neuropediatrics concerns, newborn with decrease of conscience level and convulsions reveal complicated childbirths, and

asphyxia represents only 6 to 10% like main cause of CP. In encephalopathy neonatal case, what ordinarily is accompanied by low Apgar punctuation, there are likeness with asphyxia results, but its main cause can be placentary infection or metabolic and genetic morbidity (PASCUAL; KOENIGSBERGER, 2003).

The largest percentages found in ataxia, following by hemiparesia and diparesia, reveal smallest motor impairment, when compared with cases of quadriparesia, quadriplegia and coreo-atetosis associated with quadriparesia.

Wounds et. al. *apud* MacPhail & Kammer (2004), introduce a subject with quadriplegia, with neuromotor impairment classified with a level III, what is serious. A subject with diplegia and hemiplegia, what walking without support, with motor impairment classified as I and II, light and moderate levels.

Conclusion:

Considering motor impairment that characterizes the development of individuals with Cerebral Palsy, what was evidenced in the accomplished evaluations, it fits the importance of of Physical Education Professional's knowledge about the gross motor function from this people.

The teacher of School Physical Education, while component of inclusive team of specific education needs children in the regular teaching, should know those individuals' motor peculiarities, to make possible better programming of their classes with real inclusion of such students, so that their potential isn't under or overrate.

Depending on paralysis classification, the motor score is differentiated, demanding specific conducts in proposal of activities to the practice of the School Physical Education, conducts also related to each student's individualities, considering the secondary prevention of osteo-muscle-articulate deformities and pshycho-emotional alterations promote by a "false" inclusion in the classes. Children with serious motor impairment presenting gross motor in Lying and Rolling dimension, fo example, like is verified in people with quadriplegia and coreo-atetosis; they need activities to stimulate their motor ability, observing them for the potentiality and not for the presented difficulties, contributing for a real school inclusion and life quality promotion.

References:

BARLETT, D.; PALISANO, R. J. Physical Therapists' Perceptions of Factors Influencing the Acquisition of Motor Abilities of Children With Cerebral Palsy: Implications for Clinical Reasoning. **Physical Therapy**, v. 82, n. 3, 2002.

BOBATH, K, BOBATH, B. **Desenvolvimento Motor nos Diferentes tipos de Paralisia Cerebral**. Manole: São Paulo, 1978.

BRINGAS-GRANDE, A et al. Paralisis cerebral infantil: estúdio de 250 casos. **Revista de Neurologia**, v. 35, n. 9, 2002.

CERVO, A. L.; BERVIAN, P. A. **Metodologia Científica**. 4. ed. São Paulo: MAKRON Books, 1996.

CHAGAS, P. S. C.; et al. Análise das intervenções utilizadas para a promoção da marcha em crianças portadoras de paralisia cerebral: uma revisão sistemática de literatura. **Rev. Bras. Fisioter.** ,v. 8, n. 2, 2004.

EPI INFO 2000, versão 3.2.2 - **Epidemiology Program Office - Centers for Disease Control and Prevention (CDC)** - United States Department of Health and Human Services. Tradução para o Português: FREIRE, Sérgio (2004) UERJ. Avaliable in <http://www.lampada.uerj.br/epiinfo>. Acess 2004.

MANCINI, M. C. et. al. Comparação do Desempenho de Atividades Funcionais em Crianças com desenvolvimento normal e em crianças com Paralisia Cerebral. **Arq Neuropsiquiatr**, v. 60, n. 2-B, 2002.NESTLÉ. **Regulamento Técnico para promoção comercial dos alimentos para lactentes e crianças de primeira infância.** Resolução - N° 222, de 05 de agosto de 2002. Avaliable in < http://nutricaoinfantil.nestle.com.br/login/complemento/definicoes.asp> Access 20 april 2003.

PASCUAL, J. M; KOENIGSBERGER, M.R. Parálisis cerebral: factores de riesgo prenatales. **Revista de Neurologia**, v. 37, n 3, 2003.

PITREZ, J. L.; PITREZ, P. M. **Pediatria Consulta rápida.** 2ª ed. Porto Alegre : Artmed, 1998.

ROSEMBAUM, P. L. et. al. Prognosis for Gross Motor Function in Cerebral Palsy. **JAMA**, v. 288, n. 11, 2002.

ROTTA, N. T. Paralisia Cerebral. In: MELO-SOUZA, S. E. **Tratamento das Doenças Neurológicas**. Rio de Janeiro, Guanabara Koogan, 2000. p. 750-752.

RUSSELL, D.et al. **Gross Motor Function Measure: A Measure of Gross Motor Function in Cerebral Palsy.** 2. ed. Manual available from CanChild Centre for Childhood Disability Research. Institute for Applied Health Sciences, McMaster University, 1400 Main St W. Hamilton. Ontario, Canadá L8S 1C 1993.

SANTOS, C. S.; MARQUES, M. A. R. **Políticas públicas de inclusão escolar dos alunos que apresentam necessidades educacionais especiais AANEE:** a relação entre formação de professores e realidade educacional. Avaliable in <www.rizoma.ufsc.br/semint/trabalhos> Access 21 december 2003.

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GROSS MOTOR FUNCTION IN CHILDREN WITH CEREBRAL PALSY ENROLLED IN PUBLIC REGULATE SCHOOL OF FLORIANÓPOLIS/SC, BRAZIL

Abstract

The Scool Physical Education teacher's knowledge about peculiar motor characteristics from students with Cerebral Palsy (CP) is an emerging aspect when the special education needs people's inclusion is discussed and put in practice. This work, descriptive-diagnosis of the transverse type, aimed to evaluate the gross motor function in children with CP, aged 04 to 15 years, enrolled in public regulate teaching from Florianópolis/SC, since February to May of 2005. For the motor function evaluation GMFM-88 was used, with verification of historical in pregnancy, perinatal and neonatal period done by the completion of a Form of Antecedents. 22 children were assessed, with medium age 7,9 years old, most female (63,3%), and quadriparesia the largest percentile (36,4%). In description of antecedents, was verified prematurity (19%); very low birth weight (25%); perinatal asphyxia (42,8%); diagnosis of CP only to the 5 years old (27,3%). About gross motor function, smaller scores were obtained by the cases of Quadriplegia and Coreo-atetosis, with expected value zero in functions of Standing and Walking, Running and Jumping. Girls had Score-total in larger medium value than boys, but the difference wasn't statistically significant. To make possible the inclusion of that population in the School Physical Education is important to know their motor potentialities, elaborating planning to involve the student and prevent the reinforcement of pathological patterns of movement, promoting the quality of life of such population.

Word-key: Cerebral palsy. Gross Motor Function Measure-GMFM. School Physical Education.

ÉVALUATION MOTRICE DES ENFANTS AVEC PARALYSIE CÉRÉBRALE INSCRITS À L'ÉCOLE PUBLIQUE À FLORIANÓPOLIS/SC

Résumé

La connaissance du professeur d'éducation physique sur les caractéristiques motrices individuelles des élèves avec Paralysie Cérébrale (PC) est un aspect mis en valeur dans un moment où l'inclusion de gens avec besoins educationels espéciaux est très discuté et mis em oeuvre. Ce travail, descriptif-diagnostique tu type transversal, a cherché à évaluer l'ample motricité des enfants avec PC, de 04 à 15 ans, inscrits à l'école publique à Florianópolis/SC de février à mai 2005. Pour l'évaluation motrice a été utilisé lê GMFM-88, avec verification d'historique pré, péri et neonatal à partir du rémplissage d'um Formulaire d'Antécédents. Vingt-deux enfantsont été évalués, avec l'âge moyen de 7,9 ans, étant la majorité du sexe féminin (63,3%), et lê pourcentage plus grand de compromission avec lê diagnostic de Quadriparesie (36,4%). Em ce qui concerne la description des antécédents, une extreme prématurité a été verifié (19%); poids très bas à la naissance (25%); asphyxie périnatal (42,8%); diagnostic de la PC seulement à l'âge de 5 na (27,3%). Dans la motricité, de plus petites valeurs ont étpe obtenues par les cas de la quadriplégie et coreo-atetosis, aves la valeur attendue “zero” dans les fonctions d'êtrê Debout et Marcher, Ocurrir et Sauter. Lês filles ont obtenu une valeur moyenne plus grande que lês garçons, mais la différence n'est pás statistiquement significative. Afin de rendre possible l'inclusion de cette population dans l'éducation physique à l'école, il est important de connaître sa potentialités motrices, eu élaborant une planification on qui implique l'élève et qui prévienne le renforcement de standards pathologiques du mouvement, em favorisant la qualité de la vie de cette population.

Mots-Clés: Paralysie Cérébrale. Gross Motor Function Measure-GMFM. Éducation physique à l'École.

VALORACIÓN MOTORA EN NIÑOS CON PARÁLISIS CEREBRAL INFANTIL MATRICULADOS EN LA ENSEÑANZA PÚBLICA REGULAR DE FLORIANÓPOLIS/SC, BRASIL

Resumen

El conocimiento del profesor de Educación Física Escolar sobre las características motoras de alumnos con Parálisis Cerebral Infantil (PCI) es aspeto emergente em um momiento em que la inclusión de personas com necesidades educacionales especiales es debatida com amplitud y disponida en práctica. Se realizó, neste trabajo descriptivo-diagnóstico del tipo transversal, valoración de la motricidad ampla de niños con PCI, 04 a 15 años de edad, matriculados em la enseñanza pública regular de Florianópolis/SC, desde febrero a mayo del año 2005. Para la valoración motora fue utilizado el GMFM-88, tendo sido verificado el histórico del embarazo, parto y período tras el nacimiento atraves de uno Formulario de Antecedentes. Fueron valorados 22 niños, con edad media igual 7,9 años, la mayoria mujeres, con mayor frecuencia de la Cuadriparesia (36,4%). En la descripción de antecedentes, fue observado gran prematuridad (19%); mucho bajo peso al nacer (25%); asfixia perinatal (42,8%); diagnóstico tardío de la PCI (solamente a los 5 años de edad en 27,3%). Em la valoración motora, menores valores fueron obtenidos en los casos de Cuadriplegia y Coreo-atetosis, con valor igual cero en las funciones de Estar de pie y Caminar, Correr y Saltar. Niñas tuvieron mayor valor medio del Escore Total que los niños, diferencia no estadisticamente significante. Afin de tornar posible la inclusión desta población en la Educación Física Escolar és important conocer su potencialidad motora, planeando aulas que envolvan el educando y hacen prevención del refuerzo de patrones patológicos del movimiento, promoviendo su calidad de vida.

Palabras-clave: Parálisis Cerebral Infantil. Medida de la Motricidad Ampla GMFM 88. Educación Física Escolar.

AVALIAÇÃO MOTORA EM CRIANÇAS COM PARALISIA CEREBRAL MATRICULADAS NO ENSINO PÚBLICO REGULAR DE FLORIANÓPOLIS/SC

Resumo

O conhecimento do professor de Educação Física Escolar sobre características motoras peculiares de alunos com Paralisia Cerebral (PC) é aspecto emergente num momento em que a inclusão de pessoas com necessidades educacionais especiais é amplamente discutida e colocada em prática. Este trabalho, descritivo-diagnóstico do tipo transversal, buscou avaliar a motricidade ampla de crianças com PC, de 04 a 15 anos, matriculadas no ensino público regular de Florianópolis/SC de fevereiro a maio de 2005. Para a avaliação motora foi utilizado o GMFM-88, com verificação de histórico pré, peri e pós natal feita pelo preenchimento de um Formulário de Antecedentes. Foram avaliadas 22 crianças, com idade média de 7,9 anos, sendo a maioria do sexo feminino (63,3%), e quadriparesia o quadro mais freqüente (36,4%). Quanto à descrição de antecedentes, verificou-se extrema prematuridade (19%); muito baixo peso de nascimento (25%); asfixia peri-natal (42,8%); diagnóstico da PC só aos 5 anos (27,3%). Na motricidade, menores escores foram obtidos pelos casos de Quadriplegia e Coreo-atetose, com esperado valor *zero* em funções de ficar Em Pé e Andar, Correr e Pular. Meninas tiveram Escore-Total em valor médio maior que meninos, diferença não estatisticamente significante. A fim de possibilitar a inclusão dessa população na Educação Física Escolar, é importante conhecer suas potencialidades motoras, elaborando planejamento que envolva o educando e previna o reforço de padrões patológicos de movimento, promovendo a qualidade de vida de tal população.

Palavras-chave: Paralisia Cerebral. Gross Motor Function Measure-GMFM. Educação Física Escolar.