

## 9 - ESTIMATE OF ENERGY EXPENDITURE IN PHYSICAL EDUCATION CLASSES FOR STUDENTS WITH DISABILITIES IN DIFFERENT SYSTEMS OF INTELLECTUAL EDUCATION.

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### INTRODUCTION

In recent years, despite the recognition of the importance of physical activity to promote a healthy lifestyle, and a great ally in preventing the accumulation of body fat, increases the prevalence of sedentary. However children with DI are among population groups where this process has been emphasizing inactivity with devastating effects. Surveys of the World Health Organization suggest that physical inactivity alone accounts annually for approximately two million deaths worldwide (1).

From the earliest concepts of education for the disabled in 1700 until the Declaration of Salamanca (World Conference on special educational need, which occurred in June of 1994) walked the education to be an "axis" articulating the development of inclusive actions confirming its commitment to education for all (2,3,4). The DI defined by disability characterized by significant limitations in intellectual functioning and adaptive behavior (5), has a prevalence of approximately 1% (6), with up to 2% of school age (7). In Brazil, about 1.6% of the population has this condition according to the IBGE (8). Studies show low levels of physical activity in this population when compared with individuals without DI and very high rates of physical inactivity and associated diseases (9,10,11).

The development has to do with factors such as task, individual and environment (12). When it comes to the poor is especially dependent and the relation of genetic factors and organic maturation, the experiences, the exploration of the body, the environment and interact with others and only then, that the individual becomes capable of modify their responses, sensory, motor, affective, cognitive and social (13).

The school, in this scenario, it is a privileged environment for intervention programs where it plays an important and strategic role to prevent increasing the level of physical inactivity of the school population and where there are activities to promote social inclusion of family and community (14,15). Interventions based on physical activity (16) have already been made, however there was no such fact from the perspective of inclusion.

Although some studies show that physical exercise can induce positive changes in neuromotor aspects such as cardiorespiratory fitness, muscular strength and overall strength, there is a need to develop and evaluate strategies to improve the lifestyle and physical fitness of this population (17,18,19).

At least during the last 40 years was observed high prevalence of atherosclerosis, cardiovascular problems, obesity, among other problems in the population with DI (20,22). Research suggests that the reason for this is the delay in physical development, limited motivational levels than sedentary lifestyle (21,22). Likewise gains are observed over different types of intervention on physical activity and lifestyle even more severe degrees of impairment of disability (23,24,25,26).

Therefore, the purpose of this study was to analyze aspects related to body composition (BMI and WHR) and estimated energy expenditure in physical education classes in 11 to 13 years, male, owned by six public schools, four with the system Inclusion (I) and 2 with the special education (EE), both low-income city of Ceilândia Federal District - Brazil.

### METHODS AND POPULATION

The study comprised a sample of 38 students, 18 of inclusive education (I) and 20 special education (EE) studied during a normal week of school physical education. Data were collected using the variables weight, height, waist and hip and use of the questionnaire, the observation by the researcher to estimate energy expenditure (IPAQ long form: 4 section recreational physical activity, sport, exercise and leisure) (28).

To collect the data measured the weight (Kg) (digital scale with a standardized Plenna, Wind model, with graduation of 100g): Child standing, looking forward, without touching anything and wearing only light clothing. And height (m): the child with bare feet, heels together against the wall where the tape was placed (flexible tape measure accurate to 1cm, brand and model EasyRead Cateb), looking forward with her head with cloth Frankfurt (parallel to the ground) and in apnea after a maximal inspiration. After acquiring the data was applied to the formula BMI (weight/height<sup>2</sup>) evaluated according to values proposed by Cole et al. (27). Regarding the questionnaire used (IPAQ) it is an instrument designed to obtain measurements to estimate the total amount of physical activity in four contexts of everyday life (school, transportation, leisure and home), but for the purpose our study used only the context where we observe the school physical education classes in addition to asking questions about the intensity and frequency of physical education.

In statistical procedures, descriptive cross-sectional study, we used analysis of variance (ANOVA) for more than two comparisons (two-way) and the Scheffé test for comparisons between groups. Criteria established for p values <or = 0.05 (5%). The study was voluntary and non-invasive held on schedule in school activities, after the accepted term of informed consent for participants.

### RESULTS

Table 1: Distribution of age and socioeconomic status in different types of education.

	Inclusão (%)N=18	E.Especial (%)N=20	P
AGE (YEARS)	11,3(10,8-12,3)	12,5(11,2-13,4)	0,67
ECONOMIC STATUS			0,21
C2			
D	4(22,2)	3(15)	
E	10(55,5)	12(60)	
	4(22,2)	5(25)	

Table 2: Details of body composition by educational segment

. Body Composition / Teaching	Inclusion n=18 MEAN(SD)	Special n=20 MEAN(SD)	p
<b>BMI</b>	<b>21,8(1.4)</b>	<b>23,9(2.1)</b>	<b>0,07</b>
<b>WHR</b>	<b>0,6(0,1)</b>	<b>0,7(0,06)</b>	<b>0,08</b>

In Table 2, concerning the data of body composition by educational segment, we observed no statistically significant data, yet the second table (27) special education students meet with a BMI greater than the inclusion of students. Perhaps the waist hip ratio, which is a predictor of obesity reinforces the fact that although neither was significant.

In the data section of physical activity, physical education (Table 3) we notice a significant difference  $< .05$  for both groups. Students of the (EE), had a physical education class as weak, at the time of observation, while the pupils in a class inclusion had no restrictions on movement and intensity.

Table 3: Given the levels of physical activity per session MET / min / week.

NAF (Section No.) / Education Sistem	Inclusion n=18 Mean (SD)	Special n=20 Mean (SD)	P
<b>1° Physical activity at work (school).</b>	<b>375(7,9)</b>	<b>287(4,5)</b>	<b>&lt;0,05</b>

After collecting data from physical education students classified in very active, active, insufficiently active (Table 4). These figures take into account the type or intensity of activity (vigorous, moderate and walking), weekly (3 to 5 times per week) and duration in minutes of activity performed (30 to 20 minutes per session during the week). Values of estimated energy expenditure had statistically significant results showing a greater number of moderate and vigorous physical activity in (I) ( $p.0.42$ ) over the (EE) with mostly light activities.

Although the intensity have been shown significant difference to those classified as very active and not active ( $> .05$ ). In the comparison of insufficiently active, which does not reach any of the recommended criteria, there was a statistically valid ( $< .05$ )

Table 4: Classification of habitual physical activity level.

Physical Education Activity /	Inclusion n = 18 (%)	Special Education N = 20 (%)	p
Very active	10(55.5)	9(45)	$>0,05$
Activity	4(22.2)	5(25)	$>0,05$
Insufficiently active	4(22.2)	6(30)	$<0,05^*$

## DISCUSSION

The regular programs of physical activity for people with intellectual disabilities are being studied more carefully in recent years. However, different studies showed that this population does not reach minimum levels of physical activity and, moreover, also has negative components in their lifestyle have not observed this issue from the perspective of inclusion. During this phase of life, young people are naturally more active than adults and physical activity in this phase represent are expressed by playing games and pranks, however it has been a growing tendency to adopt behavioral patterns hypokinetic those characterized by the activities of passive leisure.

Neurological reasons may explain the difficulty of this population in some aspects of physical fitness when compared with people without disabilities, but it is worth noting that the physiologic changes, because of metabolic adaptations generated during the development process, simply by virtue of offering the Physical activity may be an important parameter to be investigated mainly at this stage of life where I recognize the importance of active behavior (17, 18, 19).

Already on the level of physical activity we note that physical education is not accomplished by inclusion of all students, a rate that increases when we see data from special education.

Some international documents might point this problem by the lack of technical knowledge on the part of professionals (10). This fact perhaps adds to the fear of thinking that intellectual disability is directly linked to other diseases that impede the practice of physical activity and a lack of incentive, because we observed this fact knowing the levels of school attendance of special. Actually the picture of chronic non-communicable diseases such as obesity, hypertension, heart diseases and others can be installed by the lack of physical activity and positive behavior, such a framework known as a sedentary lifestyle to be targeted by public policies, macro strategies by state only, but mainly in the role of school physical education teacher should assist and monitor physical activity levels of this population vulnerable to prejudice, offering teaching strategies that lead to the knowledge of parents, guardians and the general public the content of this problematic to propose solutions for all inclusive.

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**ESTIMATE OF ENERGY EXPENDITURE IN PHYSICAL EDUCATION CLASSES FOR STUDENTS WITH DISABILITIES IN DIFFERENT SYSTEMS OF INTELLECTUAL EDUCATION.**

Introduction: Physical inactivity alone accounts annually for approximately two million deaths worldwide. Objective: To analyze the aspects related to body composition (BMI and WHR) and estimated energy expenditure in physical education classes in 11 to 13 years, male, owned by six public schools, four with the system of inclusion (I) and 2 with the special education (EE), both in low-income Ceilândia City, Distrito Federal - Brazil. Methodology: A sample of 38 students, being 18 and 20 of inclusive education for special education were studied during a normal week of school physical education. In statistical procedures, descriptive study, we used the ANOVA and Scheffé test for comparisons between groups. Criteria established for p values <or = 0.05 (5%). Results: BMI and WHR had no significant differences between p.07 education systems. Values of estimated energy expenditure had statistically significant results showing a greater number of moderate and vigorous physical activity in (I) (p.0.42) over the (EE) with mostly light activities. Conclusion: The study looked at physical activity levels below those required for the group of special education.

**KEYWORDS:** Energy expenditure, Physical Education and School

### **ESTIMATION DE LA DÉPENSE ÉNERGETIQUE DES COURS D'ÉDUCATION PHYSIQUE POUR LES ÉLÈVES HANDICAPÉS DANS LES DIFFÉRENTS DEGRÉS D'ENSEIGNEMENT INTELLECTUELLE**

Introduction: L'inactivité physique représente à lui seul chaque année environ deux millions de décès dans le monde entier. Objectif: analyser les aspects liés à la composition corporelle (IMC et WHR) et la dépense énergétique estimée dans les cours d'éducation physique dans les 11 à 13 ans, de sexe masculin, appartenant à six écoles publiques, quatre avec le système d'inclusion (I) et 2 avec l'éducation spéciale (EE), les deux pays à faible revenu Ceilândia City, Distrito Federal - Brésil. Méthodologie: Un échantillon de 38 étudiants, soit 18 et 20 de l'éducation inclusive de l'éducation spéciale ont été étudiés au cours d'une semaine normale de l'éducation physique à l'école. Dans les procédures statistiques, étude descriptive, nous avons utilisé le test ANOVA et Scheffé pour les comparaisons entre les groupes. Les critères établis pour les valeurs de  $p \leq 0,05$  (5%). Résultats: l'IMC et WHR avait pas de différences significatives entre les systèmes d'éducation p.07. Les valeurs de la dépense énergétique estimée eu des résultats statistiquement significatifs montrant un plus grand nombre d'activité physique modérée et vigoureuse (I) (p.0.42) sur le (EE) avec la plupart des activités légères. Conclusion: L'étude portait sur les niveaux d'activité physique inférieures à celles requises pour le groupe de l'éducation spéciale.

**MOTS-CLÉS:** La dépense d'énergie, l'éducation physique et de l'école

### **PRESUPUESTO DE GASTOS DE ENERGÍA EN LAS CLASES DE EDUCACIÓN FÍSICA PARA ESTUDIANTES CON DISCAPACIDAD EN DIFERENTES SISTEMAS DE EDUCACIÓN INTELECTUAL.**

Introducción: La inactividad física por sí sola representa anualmente alrededor de dos millones de muertes en todo el mundo. Objetivo: Analizar los aspectos relacionados con la composición corporal (IMC y RCC) y el gasto de energía estimado en las clases de educación física en 11 a 13 años, sexo masculino, de propiedad de seis escuelas públicas, cuatro con el sistema de inclusión (I) y 2 con la educación especial (EE), tanto en Ceilândia de bajos ingresos, DF - Brasil. Metodología: Una muestra de 38 alumnos, siendo 18 y 20 de la educación inclusiva para la educación especial fueron estudiadas durante una semana normal de la educación física escolar. En los procedimientos estadísticos, el estudio descriptivo, se utilizó el test ANOVA y Scheffé para las comparaciones entre los grupos. Criterios establecidos para  $p < \text{valores o igual a } 0.05$  (5%). Resultados: El índice de masa corporal y RHO no presentaron diferencias significativas entre los sistemas de educación p.07. Los valores de gasto energético estimado tuvieron resultados estadísticamente significativos que muestra un mayor número de actividad física moderada y vigorosa en (I) (p.0.42) sobre el (EE) con su mayoría actividades de la luz. Conclusión: El estudio examinó los niveles de actividad física por debajo de los requeridos para el grupo de educación especial.

**PALABRAS CLAVE :** El gasto de energía, Educación Física y la Escuela

### **ESTIMATIVA DE GASTO ENERGÉTICO EM AULAS DE EDUCAÇÃO FÍSICA PARA ESCOLARES COM DEFICIÊNCIA INTELLECTUAL EM DIFERENTES SISTEMAS DE ENSINO.**

Introdução: O sedentarismo por si só responde anualmente por aproximadamente dois milhões de mortes por todo o mundo. Objetivo: Analisar, os aspectos relacionados à composição corporal (IMC e RCQ) e estimativa de gasto energético nas aulas de educação física em escolares de 11 a 13 anos, do sexo masculino, pertencentes a 6 escolas públicas, 4 com o sistema de inclusão (I) e 2 com o ensino especial (E.E), ambas de baixa renda na cidade de Ceilândia, Distrito Federal - Brasil. Metodologia: Uma amostra de 38 alunos, sendo, 18 do ensino inclusivo e 20 do ensino especial foram estudados durante uma semana normal de educação física escolar. Nos procedimentos estatísticos, estudo do tipo descritivo, utilizou-se a análise de variância ANOVA, e o teste de Scheffé para comparações entre grupos. Critério estabelecido para valores de  $p < \text{ou } = a 0,05$  (5%). Resultados: O IMC e a RCQ não teve diferenças significativas p.07 entre os sistemas de ensino. Valores de estimativa de gasto energético tiveram resultados estatisticamente significativos demonstrando um maior número de atividades físicas vigorosas e moderadas no (I) (p.0.42) em detrimento ao (E.E) com atividades leves na sua maioria. Conclusão: O estudo observou níveis de atividade física abaixo dos valores considerados necessários para o grupo dos estabelecimentos de ensino especial.

**PALAVRAS-CHAVE:** Gasto energético, Educação física e Escolares