52 - COMPARATIVE STUDY OF PSYCHOMOTOR DEVELOPMENT, FUNDAMENTAL MOVEMENTS LEVEL, BODY MASS INDEX AND FAT PERCENTAGE AMONG PUBLIC AND PRIVATE SCHOOLS STUDENTS FROM DIFFERENT REGIONS IN RIO DE JANEIRO

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INTRODUCTION

Motor development evolves over the life cycle, and childhood is the most critical moment of this cycle. Motor development involves complex changes and related to themselves. Each individual will develop in a specific way, with a specific standard, which depends on their biological construct and environmental influences. The development can be understood as the interaction between the individual biological characteristics (growth and maturation) the environment to which the subject is exposed for life (FRISANCHO, 2009; GALLAHUE e OZMUN, 2005;. MALINA et al, 2009; PAPALIA e OLDS, 2000; ROGOFF, 2005). During development, particularly during childhood, the organization of psychomotor structures occurs. The psychomotor structures organize themselves from the most basic ones such as Tonicity and Balance to the most complex such as image and body scheme, laterality, Space-Temporal Organization, General Motor Coordination and Fine Motor Coordination (FONSECA, 1995). This arrangement enables the individual to psychomotor functionality when living in his environment, and respond to stimuli provided in any everyday situation. Motor development occurs through phases or stages, from reflex movements to specialized skills. In the course of the development of these stages is the stage of fundamental movements, considered the one that the child discovers the form of organization of movements, named stabilizers, Locomotor and Manipulative (GALLAHUE e OZMUN, 2005). The organization of psychomotor structures occurs in pararell to the maturation of the fundamental movements. This maturation composes the individual functionality. The experiences in childhood will provide the basis for the specialized skills, which are the base for the insertion of a child in more elaborate physical activities. There is a great variation among children, concerning the level of skills, ages and genders, as well as the opportunities to practice and interactions in different contexts (HAYWOOD e Getchell 2004).

Another important aspect in child development refers to body composition that can influence skills can be influenced by nutritional status, since overweight or obese children have poorer performance in fundamental motor skills (BERLEZE; HAEFFNER; VALENTINI, 2007). Childhood can be marked by the acquisition of habits that will last throughout life, since the habits acquired at this stage tend to remain during adulthood (GALLAHUE e DONNOLLY, 2008). Investigating and comparing the psychomotor and the maturation levels of basic movements to the body mass index and children fat percentage between 8 and 10 years old, have been defined as the objective of the present research. These children mentioned in this research study in public and private schools from different regions in Rio de Janeiro.

METHODOLOGY

Four hundred students have been analyzed, aged 8 to 10 years, coming from ten schools in Rio de Janeiro, with 40 children in each school, of both genders. Among the 10 schools, 5 pupils were from public schools and the other five from private ones. The schools were located in 5 different regions in Rio de Janeiro (South Zone, West Zone, Central, North Zone and Baixada Fluminense). Besides that, in each region two schools have been selected, a public school and a private one.

The instruments used in this study were 1) Psychomotor Battery of Vitor da Fonseca (1995), which shows an analysis protocol of the guinea pig´s psychomotor profile by evaluating seven psychomotor factors (Tonicity and Balance; Lateralization; Body Concept and Spatial-Temporal structuring; Global and Fine Praxis, 2) Analysis Protocol of Maturation Level of Fundamental Movements proposed by Gallahue and Ozmun (2005) measuring 23 movements arranged through class analysis to stabilizer, locomotor and manipulative movements; 3) Body Mass Index protocol proposed by the OMS (2007); 4) Rank Protocol of Fat Percentage proposed by Lohman (1997) - triceps and subscapular folds.

Quantitative data analysis was based on measures of central tendency (arithmetic mean) and dispersion (standard deviation) , estimates of probability density functions and complementary cumulative function in addition to the Pearson correlation coefficient , theoretical basis of applied statistics based in Ross (2010).

RESULTS

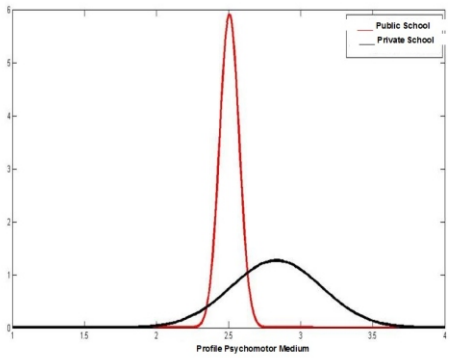
The data shown below in tables 1,2 and 3, Figures 1, 2 and 3, regards the Psychomotor Level (level of psychomotor structures) Maturation Level of Fundamental Movements, BMI and fat percentage per group, Public Schools nd Private. Table 1 shows the means and the Psychomotor Profile standard deviations , calculated separately for students from public schools and private schools and analysis of different ages (8, 9 and 10) .

Table 1: Mean and standard deviation (SD) of Psychomotor Level Medium Public and Private schools. (According to students ages 8 ,9 and 10 years).

	Public Schools				Private Schools			
	8 years	9 years	10 years	Total	8 years	9 years	10 years	Total
Mean	2,3257	2,5229	2,5400	2,5057	2,3257	2,4829	2,5400	2,8314
SD	0,1108	0,1590	0,0695	0,0675	0,2961	0,3091	0,2824	0,3143

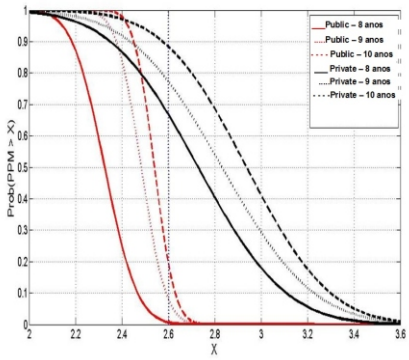
There has been an increasing trend of Psychomotor profile mean with increasing age of the students, aspect observed for each of the student groups. The standard deviation analysis shows much lower values for the data of public schools compared to the data for private schools. This means a greater concentration of data around the average of the profiles of the public private schools in relation to these , in turn , present most heterogeneous profile values. The greater dispersion profiles of students from public schools in relation to the data of private schools can be seen when approaching the data for each group by Gaussian distribution. The estimates of the probability density functions of the Gaussian distributions from the means and standard deviations are shown in Table 1 and shown in Figure 1.

Figure 1 : Profile of Approach Psychomotor East for school by Gaussian probability density functions



Figures 2 and 3 below, show curves estimated for the complementary cumulative functions according to the ages of the students from public and private schools. For the data presented in Figure 2, it can be seen that only 20 % of public schools tend to have Psychomotor Profile Average students with 10 years older than 2.6 (blue vertical dashed line) . This measure approximates 90 % for private schools. Similar analyzes can be performed for various Psychomotor Medium profile values and ages of the three analyzed students.

Figure 2 - Profile Probability Psychomotor East for school be greater than X to students from 8, 9 and 10 years of public and private schools

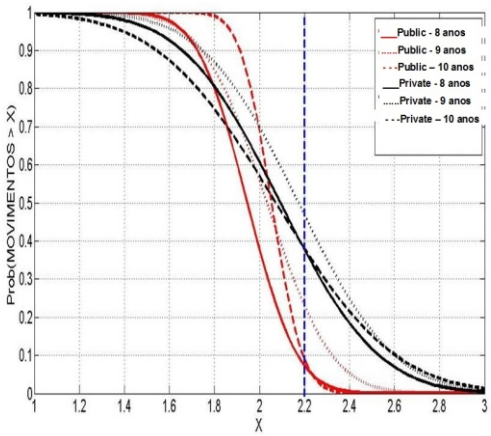


The results of the statistical analysis for the variable Fundamental Movements can be seen in Table 2 and Figure 3 below .

Table 2 : Mean and standard deviation (SD) of Fundamental Movements of Public and Private Schools (According to students ages 8, 9 and 10 years).

	Public School				Private School			
	8 years	9 years	10 years	Total	8 years	9 years	10 years	Total
Mean	1,9467	2,0333	2,0533	1,9867	2,0933	2,1733	2,0733	2,16
SD	0,1742	0,2261	0,1095	0,1017	0,3411	0,3328	0,4139	0,3570

Figure 3 : Probability of Fundamental Movements East for school be greater than X to students from 8, 9 and 10 years of public and private schools



Also was used as a statistical measure of the Pearson correlation coefficient between the two study variables : Profile Psychomotor East and Fundamental Movements (ROSS , 2010). The module of this coefficient varies between 0 and 1 , and expresses the degree of linear relationship between two variables. This relationship or dependence between two variables is so much greater the greater the value of the Pearson correlation between the two variables. The values of Pearson correlation for the variables Psychomotor Profile Medium and Medium Fundamental Movements for public and private schools are worth respectively 0.361 and 0.719. These values indicate a low correlation or dependence between variables to public school, and indicates a reasonable amount of correlation between these variables to private schools.Are presented in Table 3, the means values of the Fat Percentage and body mass index (BMI) for the two groups of schools according to the ages of the students.

Table 3 - Mean BMI and Fat Percentage

	BMI			Fat Percentage		
	8 years	9 years	10 years	8 years	9 years	10 years
Public School	18,22 (overweight)	17,13 (normal)	16,75 (normal)	17,04 (normal)	15,87 (normal)	18,37 (normal)
Private School	17,88 (overweight)	17,65 (normal)	20,22 (overweight)	18,06 (normal)	17,80 (normal)	19,24 (normal)

Other groups compared have revealed little difference among them, the Psychomotor Level and Maturation Level of Fundamental Movements, BMI and fat percentage. This is probably due to the age group investigated that, as it is shown in the research, tends to show a condition of stable psychomotor status referring to this time of development.

CONCLUSION

Considering the results revealed in the research, the sample groups regarding the Private Schools , stood out in relatively Psychomotor Level and Maturity Level of Fundamental Movements. Regarding the analysis of BMI and Fat Percentage, the comparison between schools showed no significant difference. Regarding ages , children from 8 years on average are overweight , children 9 years and regular children 10 years of private schools have shown overweight and children 10 years of normal public schools.

This finding confirms some studies showing the superiority of private schools in infrastructure in relation to public schools (DEMO, 2007), which can facilitate forms of motor trials of children.

The infrastructure of a school has the driving trials of its students compared to public school students, where infrastructure is poor. As for the results for the BMI and Fat Percentage, private schools showed higher levels than public schools, in more distant levels of normal and close to overweight. This result may be related to the fact that students from private schools present economic level of students from public schools, and have more access to industrialized food.

The results obtained in this study lead to a significant motor learning targeted recommendation in schools, taking into account the importance of school physical education as enabler of this area, with effective instrumental programs (FONSECA, 1995; GALLAHUE e DONNOLLY, 2008).

Conclusively research suggests that the Physical Education contemplate as eyeliners goals, enabling the formation of children based on the training and optimization of psychomotor and fundamental movements structures, covering more than the motor component, but psychomotor development that involves the cognitive aspects , affective and social. As the body mass index and fat percentage, the Physical Education can encourage healthy habits such as regular physical activity and healthy eating, thus helping to levels considered normal levels in these aspects.

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COMPARATIVE STUDY OF PSYCHOMOTOR DEVELOPMENT, FUNDAMENTAL MOVEMENTS LEVEL, BODY MASS INDEX AND FAT PERCENTAGE AMONG PUBLIC AND PRIVATE SCHOOLS STUDENTS FROM DIFFERENT REGIONS IN RIO DE JANEIRO

ABSTRACT

The present study has investigated and compared the Psychomotor Level and Maturation level of Fundamental Movements with Body Mass Index (BMI) and Fat Percentage of children aged 8 to 10 years old, from public and private schools in different regions in Rio de Janeiro. Four hundred students have been analysed. These students study in 10 different schools in the state. Fourty kids from each school and both genders have been analysed. Among these 10 schools, 5 were public whereas the other 5 were private. The instruments used in this study were 1) Psychomotor Battery of Vitor da Fonseca (1995); 2) Analysis Protocol Maturation Level of Fundamental Movements proposed by Gallahue and Ozmun (2005); 3) Body Mass Index protocol proposed by the WHO (2007); 4)Considering the results revealed in the study, the groups analyzed regarding the Private Schools stood out in relatively Psychomotor Level and Maturation Level of Fundamental Movements. However, BMI and Fat Percentage have been closer to what is regarded as the normal level. The other groups have shown a slight difference in psychomotor level, maturation of Fundamental Movements, BMI and fat percentage in comparison to one another. This is probably due to the age of the group investigated, which tends to show a stable psychomotor status condition referring to this period of development. Conclusively research suggests that the Physical Education contemplate as eyeliners goals, enabling the formation of children based on the training and optimization of psychomotor and fundamental movements structures, covering more than the motor component, but psychomotor development that involves the cognitive aspects , affective and social, encourage healthy habits such as regular physical activity and healthy eating.

KEYWORDS: Psychomotor Development, Fundamental Movements, Body Mass Index

ÉTUDE COMPARATIVE SUR LE NIVEAU PSYCHOMOTEUR, LE NIVEAU DE LES MOUVEMENTS FONDAMENTAUX, L'INDICE DE MASSE CORPORELLE ET LE POURCENTAGE DE GRAISSE ENTRE LES ÉLÈVES DE LES ÉCOLES PRIVÉES ET CEUX-LÀ DE LES ÉCOLES PUBLIQUES ISSUS DE DIFFÉRENTES RÉGIONS DU RIO DE JANEIRO

RESUMÉ

Cette étude analyse et de compare le niveau psychomoteur et le niveau de la maturation de les mouvements fondamentaux avec l'indice de masse corporelle (IMC) et le pourcentage de graisse de les enfants âgés de 8 à 10 ans, étudiants aux écoles privées et publiques issus de différentes régions du Rio de Janeiro. L'étude porte sur 400 élèves issus de dix écoles (cinq publiques et cinq privées), 40 élèves de chaque école, les deux sexes. Elle s'appuie sur quatre outils d'évaluation: 1) Batterie Psychomotrice Vítor da Fonseca (1995); 2) Protocole d'Analyse du Niveau de Maturité de les Habilités Motrices Fondamentaux proposé par Gallahue e Ozmun (2005); 3) Protocole de l'IMC proposé par l'OMS (2007); 4) Protocole de Classification de le Pourcentage de Graisse proposé par Lohman (1997) – Les Plis Cutanés Tricipital et Sous-Scapulaire. Considérant les résultats révélés dans l'enquête , les groupes d'échantillons concernant la Écoles privées , se distinguent relativement psychomoteur niveau et niveau de maturité des mouvements fondamentaux . Il a été observé à partir des résultats , liée à l'IMC et pourcentage de graisse , que parmi les groupes analysés , il n'y avait pas beaucoup de différence , tout le monde était proche du niveau considéré comme normal, probablement parce que le groupe d'âge investigué normalement présente statut psychomoteur stable référent à cette periode de développment. La conclusion de la recherche suggère que l'éducation physique permet à l' éducation des enfants sur la base de la formation et l'amélioration des structures de psychomotricité et les mouvements fondamentaux , en plus de la composante du moteur , le développement psychomoteur qui implique les aspects cognitifs, émotionnels et sociaux , ainsi que d'encourager de saines habitudes que la pratique d'une activité physique régulière et une alimentation saine .

MOTS-CLÉS: Développement Psychomoteur, Mouvements Fondamentaux, Indice de Masse Corporelle

ESTUDIO COMPARATIVO DEL NIVEL PSICOMOTOR, NIVEL DE LOS MOVIMIENTOS FUNDAMENTALES, ÍNDICE DE MASA CORPORAL Y PORCENTAJE DE GRASA DE LAS ESCUELAS PÚBLICA Y PRIVADA DE DIFERENTES REGIONES DE RÍO DE JANEIRO

RESUMEN

El presente estudio investigó y comparó el nivel psicomotor y el nivel de maduración de los movimientos básicos con el índice de masa corporal y porcentaje de grasa de los niños de 8 a 10 años de escuelas públicas y privadas de Río de Janeiro. Se analizaron 400 alumnos, procedentes de diez escuelas de Río de Janeiro, con 40 niños en cada escuela, de ambos sexos. Entre las 10 escuelas, 5 eran de escuelas públicas y 5 privadas. Los instrumentos utilizados fueron: 1)Batería Psicomotora de Vítor da Fonseca (1995); 2) Protocolo de Análisis del Nivel de Maduración de los Movimientos Fundamentales propuesto por Gallahue y Ozmun (2005); 3) Protocolo de Índice de Masa Corporal propuesto por la OMS (2007); 4)Protocolo de Clasificación de Porcentaje de Grasa propuesto por Lohman (1997) – Pliegues Tricipital y Subescapular. Teniendo en cuenta los resultados en la búsqueda, los grupos con respecto a la Escuelas privadas , se destacaron en relativamente Psicomotor de nivel y el nivel de madurez de los movimientos fundamentales. Se observó en los resultados , en relación con el IMC y el porcentaje de grasa , entre los grupos, no había mucha diferencia, todos eran del nivel considerado normal, probablemente por el grupo de edad estudiado, que tiende a presentar la condición del estado psicomotor estable en referencia a este período de desarrollo. Investigación concluyente sugiere que la Educación Física debe incluir la formación de los niños sobre la base de la formación y optimización de estructuras psicomotrices y movimientos fundamentales , que cubren más de la componente motor , pero el desarrollo psicomotor que involucra los aspectos cognitivos , afectiva y social , así como fomentar hábitos saludables como la actividad física regular y una alimentación saludable.

PALABRAS CLAVE: Desarrollo Psicomotor, Movimientos Fundamentales, Índice de Masa Corporal

ESTUDO COMPARATIVO DO NÍVEL PSICOMOTOR, NÍVEL DOS MOVIMENTOS FUNDAMENTAIS, ÍNDICE DE MASSA CORPORAL E PERCENTUAL DE GORDURA ENTRE ESCOLARES ORIUNDOS DA REDE PÚBLICA E PARTICULAR DE ENSINO DE DIFERENTES REGIÕES DO RIO DE JANEIRO

RESUMO

O presente estudo investigou e comparou o nível psicomotor e o nível de amadurecimento dos movimentos fundamentais com o índice de massa corporal e percentual de gordura de crianças entre 8 e 10 anos, oriundos de escolas públicas e particulares de diferentes regiões do Rio de Janeiro. Foram analisados 400 escolares, oriundos de dez escolas do Rio de Janeiro, sendo 40 crianças de cada escola, de ambos os gêneros. Dentre as 10 escolas, 5 eram da rede pública de ensino e 5 da rede particular. Os instrumentos utilizados no presente estudo foram: 1) A Bateria Psicomotora de Vítor da Fonseca

(1995); 2) Protocolo de Análise do Nível de Amadurecimento dos Movimentos Fundamentais proposto por Gallahue e Ozmun (2008); 3) Protocolo de Índice de Massa Corporal proposto pela OMS (2007); 4) Protocolo de Classificação do Percentual de Gordura proposto por Lohman (1997) – Dobras Triciptal e Subscapular. Considerando os resultados revelados na pesquisa, os grupos da amostra referentes as Escolas Particulares, se destacaram relativamente no Nível Psicomotor e no Nível de Amadurecimento dos Movimentos Fundamentais. Observou-se a partir dos resultados, relativos ao IMC e Percentual de Gordura, que dentre os grupos analisados, não houve muita diferença, todos se mostraram próximo do nível considerado normal, provavelmente devido a faixa etária investigada, que tende a apresentar condição de status psicomotriz estável referente a esse período do desenvolvimento. Conclusivamente a pesquisa sugere que a Educação Física escolar contemple como objetivos delineadores, possibilitar a formação das crianças com base na formação e otimização das estruturas psicomotoras e dos movimentos fundamentais, abrangendo mais do que o componente motor, mas o desenvolvimento psicomotor que envolve os aspectos cognitivos, afetivos e sociais, assim como estimular hábitos saudáveis como a prática de atividade física regular e alimentação saudável.

PALAVRAS-CHAVE: Desenvolvimento Psicomotor, Movimentos Fundamentais, Índice de Massa Corporal