55 - COMPARATIVE STUDY OF THE MATURING OF FUNDAMENTAL MOVEMENTS, BODY MASS INDEX AND PERCENTAGE OF FAT LEVEL OF CHILDREN BETWEEN 8 TO 10 YEARS

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INTRODUCTION

Motor development is considered continuous change in behavior through the life cycle, influenced by the interaction of stimuli received over the tasks of everyday life, the biological level of the individual and the environmental conditions under which the individual interacts (Gallahue and Ozmun, 2005). This development occurs in stages, marked mainly by specific characteristics related to age which generally follows a linear parameter. The initial stage in the motor development after birth is the phase of the reflexive movements, characterized by involuntary movements and controlled by subcortical organization.

The reflexive movements are the basis for the development of the motor phases. After the stage of movements considered reflexive the individual goes through the phase of rudimentary movements, characterized by the performance of the first voluntary movements, basic forms of elaborate moves. Following this cycle, after the rudimentary movements the individual goes to the stage of fundamental movements, which starts the process of refinement of movements, which until then were rudimentary.

The stage of fundamental movements can be characterized as the most active period in relation to exploration and experiment of motor skills. During this period the child learns by trial, how to perform a variety of movements in Stability, Locomotor and Manipulative categories. The category of stability movements represents the movement that maintains the body's balance and postural control. The category of locomotor movements represents the movements involving changes in body location relatively to a fixed point on the surface and the category of the manipulative movements is the movement related to the motor manipulation in the environment.

The fundamental stability, locomotor and manipulative movements develop in stages related to the motor maturation, that is, early, elementary and mature stages. The maturing of the fundamental movements will directly influence the next stage of motor development, considered the stage of specialized skills. At the stage of the specialized skills the movement becomes a tool that applies to various complex motor tasks of everyday life (GALLAHUE e DONNOLLY, 2008).

Among the concerns of science in the area of human development is that connected to the influence of weight, body mass index and fat percentage in the childhood phase which can influence the whole life of the individual. Weight gains between childhood and adolescence follow approximately the curves for height, but the weight can be much more influenced by environmental factors. One of the main reasons for exacerbated weight gain in childhood and adolescence is the low level of physical activity along with eating habits rich in sugars and fats (MALINA, 2003). The level of practice of motor activities performed by children can directly influence body composition. From the investigative intent on theoretical assumptions mentioned this research raised as the main goal identify and compare the maturity level of the fundamental movements and the level of body mass index and fat percentage of children aged 8 to 10 years, students from Rio de Janeiro.

METHODOLOGY

The sample consisted of 400 schoolchildren aged 8 to 10 years from ten public and private schools from Rio de Janeiro of both genders. The instruments used in the research were the Maturity Level Analysis Protocol of Fundamental Movements proposed by Gallahue and Ozmun (2005) that measures 23 movements organized in analysis classes to stability, locomotion and manipulative movements category; Body Mass Index Protocol proposed by OMS (2007) and Fat Percentage Classification Protocol proposed by Lohman (1997) - Triceps Skinfold and subscapular.

Statistical analysis was performed through quantitative analysis , performed with 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

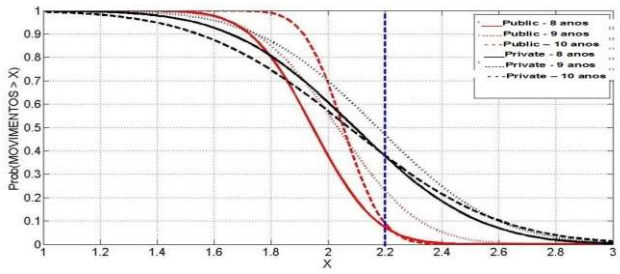
The data is plotted in tables and figure below for better understanding of the results. Figures 1 and table 1 refer to the Maturity Level of Fundamental Movements, table 2 refer to the BMI and Fat Percentage by groups.

Table 2 and Figure 1, show the results of the statistical analysis for the fundamental movements.

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



In table 3 the results are shown below, 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)

The results revealed that children in general have shown in relation to the level of maturity of the basic fundamental movements. Considering the analysis with variation between initial, elementary and mature levels, the data revealed fault in motor development as for this maturity. Children aged 10 years presented more mature level in relation to groups of children aged 8 and 9 years old. This result may be related to the time of motor task experienced by more mature children in relation to others. Regarding children aged 8 and 9 years old, the results showed that they were very similar to each other with respect to the maturing of the level of the fundamental movements. As for the Body Mass Index and Fat Percentage there was not much difference between the groups, most of the children had levels considered normal or near normal, with some cases of overweight.

Conclusion

The conclusions based on results for the fundamental movements, maturity level showed that, in general, the children had elementary level of maturity on a scale of assessment between initial, elementary and mature levels. These results reflect a failure in the motor development, which may be a consequence of the low level of motor trials within and outside the school environment, carried out by children and preadolescents. Gallahue e Donnolly (2008), in their conclusions state that 6-year children must be matured in the most fundamental skills, depending on stimulating environment in which they live. As for this present study the analyzed children were aged between 8 and 10 years, reflecting the rise in short-stimulating environments in relation to stabilizing motor, locomotor and manipulative trials.

The BMI and fat percentage showed generally close to normal, with some cases of overweight. Compared to the level of fundamental movements, BMI data and Fat Percentage showed no effective correlation. Although the maturing level of the basic movements be mostly elementary levels of maturity and not mature, as expected considering the parameters related to age, the results regarding to BMI and fat percentage showed normal in most cases.

These conclusive findings lead us to consider the importance of motor experience in various trials for body stabilization, body movement and body manipulation in the environment, to ensure a more autonomous adulthood in relation to the body and responses to stimuli that the environment imposes at all ages, especially after adulthood where these responses are influenced by the loss of motor skills. A rich childhood in motor trials can ensure a healthier and autonomous adulthood and elderly, influencing longevity and quality of life. Another consideration to be singled out here, even based on BMI data and Fat Percentage considered most close to normal, is that children are encouraged to practice regular physical activity to maintain a healthy body composition, which may also reflect a healthy adulthood.

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COMPARATIVE STUDY OF THE MATURING OF FUNDAMENTAL MOVEMENTS, BODY MASS INDEX AND PERCENTAGE OF FAT LEVEL OF CHILDREN BETWEEN 8 TO 10 YEARS

ABSTRACT

This research has as the main goal identify and compare the maturity level of the fundamental movements and the level of body mass index and fat percentage of children aged 8 to 10 years of students from Rio de Janeiro. The sample consisted of 400 schoolchildren aged 8 to 10 years from ten public and private schools of Rio de Janeiro of both genders. The instruments used in the research were the Analysis Protocol of Fundamental Movements proposed by Gallahue e Ozmun (2005) that measures 23 movements organized in analysis classes to stability, locomotion and manipulative movements category; Body Mass Index Protocol proposed by OMS (2007) and Fat Percentage Classification Protocol proposed by Lohman (1997) - Triceps Skinfold and subscapular. The results revealed that children in general have shown in relation to the level of maturity of the basic fundamental movements. Considering the analysis with variation between initial, elementary and mature levels the data revealed fault in motor development as for this maturity. Children aged 10 years presented more mature level in relation to groups of children aged 8 and 9 years old. This result may be related to the time of motor task experienced by more mature children in

relation to others. Regarding children aged 8 and 9 years old, the results show that they turned out to be very similar to each other with respect to the maturation of the fundamental movements Level. As for the Body Mass Index and Fat Percentage there was not much difference between the groups, most of the children had levels considered normal or near normal.

KEYWORDS: Fundamental Movements, Body Mass Index, Fat Percentage.

ÉTUDE COMPARATIVE SUR LE NIVEAU DE MATURITÉ DE LES MOUVEMENTS FONDAMENTAUX, L'INDICE DE MASSE CORPORELLE ET LE POURCENTAGE DE GRAISSE DE LES ENFANTS ÂGÉS DE 8 À 10 ANS

RESUMÉ

La recherche ici presentée a comme un de ses plus importants objectifs identifier et comparer le niveau de maturité de les mouvements fondamentaux, l'indice de masse corporelle (IMC) et le pourcentage de graisse infantile, de 8 à 10 ans, issus de différentes régions du Rio de Janeiro. L'échantillon a été composé de 400 étudiants venus de dix écoles privées et publiques, les deux sexes. Les instruments utilisés dans la présente étude étaient le Protocole d'Analyse du Niveau de Maturité de les Habilités Motrices Fondamentaux proposé par Gallahue e Ozmun (2005), lequel évalue 23 mouvements organisés en classes d'analyse pour trier les mouvements stabilisateurs, locomoteurs et manipulatifs ; le Protocole de l'IMC proposé par l'OMS (2007); le Protocole de Classification de le Pourcentage de Graisse proposé par Lohman (1997) – Les Plis Cutanés Tricipital et Sous-Scapulaire. Les résultats observés montrent que en analysant la maturité de les mouvements fondamentaux, les niveaux initiale, primaire et mature, les enfants d'une façon général explicitent faute au développement moteur. Lesquels qui ont 10 ans déjà, ont encore présenté un plus haut niveau de maturité moteur que ceux de 8 et 9 ans. Ce résultat est peut-être lié au temps d'éxperience motrice vécu par les enfants plus âgés. Les plus jeunes, au contraire, ont résultats homogènes entre eux. Par rapport aux données référantes aux IMC et Pourcentage de Graisse, ils démontrent le niveau général très proche de la normale, sans significative différence entre les groupes.

MOTS-CLÉS: Mouvements Fondamentaux, Pourcentage de Graisse, Indice de Masse Corporelle

ESTUDIO COMPARATIVO DEL NIVEL DE MADURACIÓN DE LOS MOVIMIENTOS FUNDAMENTALES, ÍNDICE DE MASA CORPORAL Y PORCENTAJE DE GRASA DE NIÑOS ENTRE 8 A 10 AÑOS

RESUMEN

Esta investigación tiene como objetivo principal, identificar y comparar el nivel de maduración de los movimientos fundamentales y el nivel de índice de masa corporal y porcentaje de grasa de los niños de 8 a 10 años, estudiantes procedentes de Río de Janeiro. La muestra estuvo constituida por 400 escolares de 8 a 10 años, procedentes de diez escuelas públicas y privadas de Río de Janeiro, de ambos sexos. Los instrumentos utilizados en la investigación fueron el Nivel de Maduración de los Movimientos Fundamentales propuesto por Gallahue y Ozmun (2005), que miden 23 movimientos organizados en clase de análisis para la categoría de movimientos estabilizadores, locomotores y manipulativos; el Protocolo de Índice de Masa Corporal propuesto por la OMS (2007) y el Protocolo de Clasificación de Porcentaje de Grasa propuesto por Lohman (1997) - Pliegues Tricipital y Subescapular. Los resultados mostrados revelaron como los niños en general se han mostrado en relación con el nivel de maduración de los movimientos fundamentales básicos. Teniendo en cuenta el análisis de la variación entre los niveles inicial, elemental y maduro, los datos revelaron fallos en el desarrollo motor en cuanto a esta maduración. Los niños de 10 años presentan el nivel más maduro en relación a los grupos de niños de 8 y 9 años de edad. Este resultado puede estar relacionado con el tiempo de experiencia motriz que sufren los niños con edad superior a los demás. En cuanto a los niños de 8 y 9 años de edad, los resultados muestran que resultaron ser muy similares con respecto al Nivel de Maduración de los Movimientos Fundamentales. En cuanto al Índice de Masa Corporal y Porcentaje de Grasa no había mucha diferencia entre los grupos, la mayoría de los niños tenían niveles considerados normales o casi normales.

PALABRAS CLAVE: Movimientos Fundamentales, Índice de Masa Corporal, Porcentaje de Grasa

ESTUDO COMPARATIVO DO NÍVEL DE AMADURECIMENTO DOS MOVIMENTOS FUNDAMENTAIS, ÍNDICE DE MASSA CORPORAL E PERCENTUAL DE GORDURA ENTRE CRIANÇAS DE 8 À 10 ANOS

RESUMO

A presente pesquisa levantou como objetivo principal, identificar e comparar o nível de amadurecimento dos movimentos fundamentais e o nível do índice de massa corporal e percentual de gordura de crianças entre 8 e 10 anos, escolares oriundos do Rio de Janeiro. A amostra foi composta por 400 escolares, com idade entre 8 e 10 anos, oriundos de dez escolas da rede pública e particular do Rio de Janeiro, de ambos os gêneros. Os instrumentos utilizados na pesquisa foram o Protocolo de Análise do Nível de Amadurecimento dos Movimentos Fundamentais proposto por Gallahue e Ozmun (2005), que avaliam 23 movimentos organizados em classe de análise para categoria de movimentos estabilizadores, locomotores e manipulativos; Protocolo de Índice de Massa Corporal proposto pela OMS (2007) e Protocolo de Classificação do Percentual de Gordura proposto por Lohman (1997) – Dobras Triciptal e Subscapular. Os resultados mostrados revelaram que as crianças, no geral, se mostraram em relação ao nível de amadurecimento dos movimentos fundamentais elementares. Considerando a análise com variação entre níveis inicial, elementar e maduro, os dados revelaram falha no desenvolvimento motor, quanto a esse amadurecimento. As crianças com idade de 10 anos apresentaram nível mais maduros em relação aos grupos de crianças com idade de 8 e 9 anos. Esse resultado pode estar relacionado ao tempo de experiência motora vivenciada pelas crianças com idade acima em relação às demais. Em relação as crianças com idade entre 8 e 9 anos, os resultados mostram que se revelaram muito parecidas em relação ao amadurecimento do Nível dos movimentos fundamentais. Quanto ao Índice de Massa Corporal e Percentual de Gordura não houve muita diferença entre os grupos, a maioria das crianças apresentou nível considerado normal ou próximo do normal.

P**ALAVRAS-CHAVE:** Movimentos Fundamentais, Índice de Massa Corporal, Percentual de Gordura