123 - MOTOR PERFORMANCE OF SCHOOLCHILDREN IN DIFFERENT NUTRITION STAGES : EVALUATION OF THE PROCESS OF FUNDAMENTAL MOTOR SKILLS, JUMP, KICK AND THROW.

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INTRODUCTION

It is in childhood when the child begins to experience and envision the developing world. In school, this process is intensified, so it is important to emphasize and create suitable environments for her to participate in a greater number of motor, social and psychological experiences that can promote her full development. Berleze et all (2007, p.1) reports that "the changes of physical, motor, cognitive and emotional orders occur throughout life, by experiences - restrictions on the context and the complexity of activities - task constraints.

It is also stressed that environmental factors may modify the child's development, especially in motor and physical aspects. An environment surrounded by children's lack of movement, lower parental involvement with their children; decontextualized food consumption, decreasing the time of playing away from home as a result of increased violence in big cities, and the growing routine of watching television and using the computer can transform the children into small obese, contributing to characterize obesity as a worldwide epidemic. We have seen from this discussion that the school may be the fundamental place to identify and discuss these issues because it involves a range of professionals from different areas, and also the location where the family establishes trust, particularly in the cultural factor.

However, there are contradictions in the school about interventions related to activities culturally manmade: sports, dance, games, gymnastic, struggles and popular culture movement activities, a fact that contrasts the interests of the entities. Hereby, we emphasize that the role of educators is of paramount importance for changing attitudes. And it is reached through research, which several institutions report according to Ferreira (2002, p 26) "The World Health Organization (WHO) and Pan American Health Organization (PAHO). In this sense, to give support and meaning to the change, the "storm" is essential to appropriate the knowledge of the Human Motricity Science: adding awareness of reality, behavior changing, interpersonal relationships improvement, consciousness, rational action. As Beltrão et all. (2006, p.31) reports this process "leads one to think about his world and about himself.".

We must mention that this process requires a theoretical and methodological consistent support, in this case, we report the role of physical education in its various approaches / demonstrations, which is clearly expanding its universe of research, reflection and action. Though as for physical education it is clear the increase in quantitative and qualitative studies in various areas since the beginning of the 1980s, scaled in the 1990s. Nowadays, there seems to be greater awareness in order to abandon the traditional concept used for health and thereby enter a wider meaning that adds an objective way to the multiplicity of aspects in which it is surrounded , whether inside or outside of education institutions . According to Junior Faria (1991), the discipline appears historically related to the concept of health in his scientific, official and professional discourses. In this respect, the WHO shows that this positive view on health implies that all individuals, regardless the circumstances of the moment and whatever their health conditions, can have access to well-being, taking full advantage of its capabilities. (FARINATTI & FERREIRA, 2006)

From this assumption, the observation of nutritional status and motor development in schoolchildren have awakened many researchers to monitor how these variables influence the diagnosis and identify deficiencies in different population groups, especially in schoolchildren. As Prado (2005, p. 13) reports "Childhood is said to be the period of human life that requires constant care and monitoring.". Ronan (2004) confirms, highlighting that the study on schoolchildren, when well designed can also be recognized as important indicators of health levels and a valuable indicator of life quality or lifestyle of a social group.

On nutritional status, aspect thoroughly discussed and studied on child development we understand the link of information obtained in physical, biochemical, clinical and dietary studies, resulting in equilibrium between the supply of nutrients at one side and the consumption of the organism at the other. (FERREIRA, 2002). The scientific advances achieved in the last three decades have demonstrated the great influence of this issue on the physical dimensions and the total composition of the human body. International and national organizations related to health and education have expressed their concern in developing health-promoting activities in school environment. (VASCONCELOS, 2000)

The nutritional status is of great importance in determining the health of individuals. Malnutrition, overweight and obesity are nutritional status indicative of problems that can affect the proper development and interfere in the processes of health and disease. (KOGA, 2005)

Childhood malnutrition is a condition that can cause problems for the child and consequences that can emerge in adulthood. Among malnourished children, it can be observed an increase of infectious diseases, psychomotor retardation, difficulties in school performance, decrease in height and productive capacity in adulthood (CONDE AND MONTEIRO 2000)

Malnutrition is the lack of needed fat for proper maintenance of physiological functions and, if present, represents a risk to health. Fat is necessary in the formation of the cell membrane as thermal insulation, in energy storage and fat-soluble vitamins, in the functioning of the nervous and reproductive system, as well as in the growth and maturation during puberty. However, there may be excess fat, which in turn increases the risk of developing diseases such as cardiovascular disease, hypertension, type II diabetes, obstructive pulmonary disease, osteoarthritis and certain cancers (FARINATTI & FERREIRA, 2006) . These reflections show that studies that check all of these "stages" are indispensable.

Having as positive point-based the high acceptance of physical education classes, and even boosting school students, one realizes that the school environment is a great place to prematurely analyzing the nutritional levels, as the teacher (Physical Education) searches an implementation of methods and strategies for doing timely research, and guided as new. In addition, the results of anthropometric studies can be based on direct indicators, because they show the problem itself or better saying, the biological manifestations that express the nutritional status of the population, simply promoting health.

We understand also that for children of school age, nutritional surveillance is of paramount importance and allows us to monitor growth and development and serves as an evaluation tool for measurements of intervention. As an example we can cite the school snack that, in this age group, helps the maintenance of nutritional status and also contributes to not worsen the

long-term deficits (BATISTA FILHO, 1994)

By motor development we mean it is a process that begins at conception and continues throughout life, depending on the maturation and the environment is of great importance for the whole development of the child. Many authors have tried to conceptualize motor development. To Bhome (1998), motor development refers to the changes in motor performance and / or movement of the individual in relation to behavior and motor control that occur with the interaction of the processes of maturation and experiences in their environment. Given this, we believe that the understanding of the movement is essential for children, it is an important dimension of development and human culture. Children move since birth, gaining more and more control over his body and appropriating more and more possibilities of integration with the world. They crawl, walk, handle objects, run, jump, play alone or in groups, with objects or toys, always trying new ways to use their body and movement.

When moving, children express feelings, emotions and thoughts, expanding the possibilities of significant use of gestures and body positions. Human movement is therefore more than simple displacement of the body in space: it is a language that allows children to act on the physical environment and act out on the human environment, mobilizing people through its expressive content. The manners of walking, running, throwing and jumping, among others, result from social and cultural interactions of man's relationship with the environment. Where movements whose meanings have been constructed according to different needs, interests and potential human bodily present in different cultures at several times in history. These movements are incorporated into the behavior of men, thus constituting a body culture.

Thus, different manifestations of this language began to emerge, such as dancing, games, sports practices, etc.., which make use of different gestures and body language with intentionality. Fonseca (1988) says that human movement is built on the basis of an objective. From an intention as an intimate expression, a movement becomes significant behavior. Human movement is the most comprehensive and significant human behavior.

As presented, we believe that studying the nutritional status and motor development is a current need, which will help Araguaína – To community to understand better the core entities in schools, because studies involving these variables are not found in local institutions.

METHODOLOGICAL PROCEDURES

This research, approved by the Ethics in Research Foundation for Tropical Medicine - TO with the process number 185 was characterized as a form of approach, qualitative, while objective, descriptive and as technical procedures, literature and field. The universe of the study was the city of Araguaina - TO, and the target population defined by all children from 7 to 10 years old, of both sexes, enrolled in the public school system in this city. For the evaluations were considered the schoolchilden from 7 to 10 years old, enrolled in the public school system of the city of Araguaína - To / urban area. The schools where data was collected were selected randomly by lot from the list provided by the Municipal Department of Education. All the students from the chosen schools and that were authorized to participate in the research, through the consent form, were evaluated. The sample size was defined, giving attention to the fact of meeting the formula stipulated by the finite population. In this sense, the sample consisted of 398 students and, 47.74% (n = 190) were male and 52.26% (n = 208) female, 8.48% of total population.

The analysis regarding the nutritional status of the subjects were presented according to the criteria of Waterlow (1976), recommended by WHO (World Health Organization). Nutritional status was calculated using the data of height and weight appropriate for chronological age, the standards and criteria reference of the NCHS, and the program for Evaluation of Nutritional Status in Pediatrics (PED 2000). To facilitate the statistical tests, the data regarding the nutritional status were grouped into Nutritional Risk NR (Chronic Malnutrition, Past and Present), EUT (Eutrophic) and Nutritional Disorders ND (Overweight, Obese and Extremely Obese).

For the evaluation of motor performance of schoolchildren, in their qualitative aspects, the fundamental patterns of motion were carried out using the matrix analysis of the fundamental patterns of motion proposed by Gallahue (1994). The movements were recorded on video and subsequently analyzed. The movements analyzed were jump, kick and throw.

For data analysis, we used descriptive statistics, calculating the mean and standard deviation. The Mann-Whitney test was used to compare groups on qualitative data. For the calculations we used the program Biostatisticians 5.0.

RESULTS AND DISCUSSION

The analysis of the quality of the movement performed (Table 1) revealed that children in all the movements, are in a stage of maturity lower than that expected for their age. These results show us that these children have delays in motor performance regardless of gender, evidenced in non-mature standards of performance in several fundamental motor skills.

TABLE 1. Results of the motor performance of schoolchildren in relation to nutritional status and gender.

Movement	MALE						FEMALE					
	N.R		EUT		N.D		N.R		EUT		N.D	
	Average	*SD*	*Average*	*SD*	*Average*	*SD*	*Average*	*SD*	*Average*	*SD*	*Average*	SD
Jump	2,37	0,63	2.48	0,50	2,25	0,68	2,20	0,44	2,36	0,63	2,19	0,62
Kick	2,41	0,64	2,34	0,62	2,38	0,65	1,70	0,60	1,60	0,55	1,65	0,56
Throw	2,48	0,66	2,60	0,49	2,58	0,65	2,15	0,62	2,21	0,50	2,08	0,69

N.R (Nutritional risk - malnourished, stunted and Malnourished now), **EUT** (Eutrophic), **N.D** (nutritional disorder - Overweight, Obese and extremely obese). **S.D** (standard deviation)

The analysis of the process of the motor development of the jump movement from the data presented in the table shows the highest average for students of both sexes who are in the nutritional status of eutrophic stage, the schoolchildren at nutritional risk stage had higher average than students with a nutritional disorder. Although there is a maturational higher level for eutrophic there were no statistically significant differences compared to other nutritional levels ($p > 0.05$). Statistically significant differences between genders in motor performance were not found in any nutritional stage , N.R ($U = 2488.00$, $p = 0.0668$), EUT ($U = 3949.50$, $p = 0.0742$) and N.D ($U = 295.50$, $p = 0.7487$). You can see that for this movement, regardless of gender, body weight is contributing to poor motor performance, since the transport of the body to another place requires more mechanical work, consequently for an unsatisfactory outcome. From the collected information we may consider that several factors may be related to the results below expectations, according to Copetti (1996) one factor can be explained by the complexity of movement which demands more mechanical and muscular motion, the other factor is related to little use of movement in recreational activities impeding the development of the movement even by children.

The analysis of the process of the motor development of the kick movement presented in Table 1 shows the highest maturational average for students of both sexes who are at nutritional stage of nutritional risk, the schoolchildren at nutritional

disorder had higher average than the ones classified as normal. Although there is a higher maturational level for students classified at nutritional risk there were not statistically significant differences compared to other nutritional levels (p> 0.05). For this movement, the nutritional index does not seem to interfere with motor performance, this fact leads us to believe that the cultural aspect interferes strongly. Statistically significant differences between genders in motor performance were found in all nutritional levels, N.R (U = 1397.00, p = <0, 0001), EUT (U = 2020.00, p = <0, 0001) and N.D (U = 141.00 , p = 0.009). From the data presented we believe that sex seems to be a determining factor in speed of maturation of these movements. This understanding can be understood from the culture of the schoolchildren movement, which for the boys soccer practice showed a higher maturational level for the kicking motion. This may be related to a higher level of sports activities that involve that movement such as soccer and football both at school and in extracurricular activities. A second possible explanation according to Marques (2006) would be a more premature exposure of the boys to the kick task, due to a cultural factor that exists in Brazil.

The analysis of the process of the motor development of the throw movement shows the highest maturational average for students of both sexes who are in the nutritional status of eutrophic, the schoolchildren at nutritional risk had higher average than the ones at nutritional disorder. Although there is a higher maturational level for eutrophic there were no statistically significant differences in relation to other nutritional levels (p> 0.05). Statistically significant differences between genders in motor performance were found in all nutritional stages , N.R (U = 2148.00, p = 0, 0023), EUT (U = 3050.00, p = <0.0001) and N.D (U = 187.00, p = 0, 0152). Machado et al. (2002), attributed the boys' superior results, in this type of skill, to the cultural characteristics of the environments in which the students are inserted and the greatest incentive to the boys in more active games with balls, sticks and other objects of manipulation.

CONCLUSION

Finally, it is important to note that according to Ozmun and Gallahue (2003) Children from 6 to 7 years old should already be in the mature stage of motor development and moving toward the stage of transition from the skilled movements. This consideration does not apply to the results found in this study and depicts a reality quite common in public schools in the town of Araguaína, demonstrating that there aren´t any programs that covers a considered range of items required for the schoolchildren to reach the maturation levels compatible to their age, especially by encouraging the students to increase the level of physical activity and motor experiences, even in extracurricular activities.

Considering the individual characteristics of nutritional status in relation to motor performance, in the present study we noticed superiority maturational indexes of male students over female ones in all movements surveyed, and a superior performance of the movements of students in an eutrophic situation in the grounds jump and pitching. For the fundamental movement kick, it was visualized superior maturational indexes of male students in a nutritional risk situation and female students in a nutritional disorder situation.

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MOTOR PERFORMANCE OF SCHOOLCHILDREN IN DIFFERENT NUTRITION STAGES : EVALUATION OF THE PROCESS OF FUNDAMENTAL MOTOR SKILLS, JUMP, KICK AND THROW.

ABSTRACT

This research proposed to examine the motor performance of schoolchildren from 7 to 10 years old in the public school system of Araguaína - To at different nutritional levels. To obtain the nutritional indexes, we adopted the criteria for

Warterlow (1976 -1977) using as standard the NCHS reference and the program for evaluation of nutritional status in children (PED2000). Evaluating the motor performance of schoolchildren, in their qualitative aspects, the fundamental patterns of motion were carried out using the matrix analysis of the fundamental patterns of motion proposed by Gallahue (1994). In data analysis, we used descriptive statistics, calculating the mean and standard deviation. The Mann-Whitney test was used to compare groups on qualitative data. The participants were 398 students who were, 47.74% (n = 190) male and 52.26% (n = 208) female, 8.48% of total population. Considering the individual characteristics of nutritional status in relation to motor performance, in this study it was displayed a superior maturation indexes of male students over female ones in all surveyed movements , and superior performance of the movements of students in a nutritional adequacy (eutrophic) situation in the grounds jump and throw, as opposed to fundamental movement kick that was displayed superior maturation indexes of male students at nutritional risk situation and female students in a nutritional disorder situation.

KEY WORDS: Nutritional status; motor development; schoolchildren.

RÉPRESENTATION MOTRICE DES ÉLÈVES EM DIFFERENTS STAGES NUTRITIONELS: ÉVALUATION DES PROCÈS DES HABILITÉS MOTRICES ESSENTIELLES, SAUT. SHOOT ET LANCEMENT D'OBJETS.

RÉSUMÉ

L'investigation présente a proposé la représentation motrice dês élèves entre 7 et 10 ans du réseau public de la ville d'Araguaína-TO dans les differents stages nutritionels. Pour l'obtention des indíces nutritionels, on a adopté les critères de Waterlow (1976 - 1977) employant comme façon de réference le NCHS en utilisant le programme d'évaluation de l'état nutritionel en pediatrie (PED2000). Á l'évaluation de la représentation motrice des élèves, dans ses aspects qualitatifs, les moyens fondamentaux de mouvement proposés par Gallahue (1994). Dans l'analise des données, on a utilisé une statístique descriptive, en calculant la moyenne et l'écart des moyens. Le test de Mann-Whitney a été utilisé pour comparer les groupes en données qualitatives. Ont participé de cette enquête 398 élèves, si 47,74% (n=190) du genre masculin et 52,26% du genre feminim, 8,48% de la population totale. Em considérant la caractéristique individuelle de l'état nutritionel avec la relation de la représentation motrice, dans l'étude présente on a visualisé une supériorité dans les indíces de maturation des élèves du genre masculin aux frais des élèves du genre féminin dans tous les mouvements investigués, et supériorité à la représentation des mouvements des élèves en situation adéquate nutritionelle (eutrophes) aux fondamentels saut a l'horizon et arremesso, différement du mouvement fondamentel shoot auquel on a visualisé une supériorité des indíces de maturation des élèves du genre masculin en situation de risque nutritionel et les élèves du genre féminin em situation de désordre nutritionel.

MOTS-CLÉS: État Nutritionel; Représentation Motrice; Élèves.

DESEMPEÑO MOTOR DE LOS ESTUDIANTES EM LOS DIFERENTES NIVELES DE NUTRICIÓN: EVALUACIÓN DEL PROCESO DE LAS HABILIDADES DEL MOVIMIENTOS FUNDAMENTALES, SALTO, DISPARO Y LANZAMIENTO.

RESUMEN

La presente investigación propuso analizar el desempeño motor de los estudiantes entre 7 y 10 años de la red pública del municipio de Araguaína-TO en distintos niveles nutricionales. Para obtención de los índices nutricionales, se adoptó los criterios de Warterlow (1976 -1977) empleando como estándar de referencia el NCHS y utilizándose del programa de evaluación del estado nutricional en pediatría (PED2000). En la evaluación de desempeño motor de los estudiantes, en sus aspectos cualitativos, los estándares fundamentales de movimientos fueron realizados siguiendo la matriz de análisis de los estándares fundamentales de movimiento propuesto por Gallahue (1994). En el análisis de los datos, se utilizó la estadística descriptiva, calculándose la media y desvío medio. El test de Mann-Whitney fue utilizado para comparar grupos en datos cualitativos. Participaron de la investigación 398 estudiantes, siendo, el 47,74 % (n=190) de género masculino y el 52,26% (n=208) de género femenino, el 8,48 % de la población total. Considerando la característica individual del estado nutricional con relación al desempeño motor, en el presente estudio fue visualizado una superioridad de dos índices de maduración de los escolares de género masculino en detrimento de los escolares de género femenino en todos los movimientos investigados, y superioridad en el desempeño de los movimientos de escolares en situación de adecuación nutricional (eutróficos) en los fundamentos salto y lanzamiento, diferentemente al movimiento fundamental disparo en que fue visualizado una superioridad de los índices de maduración de escolares de género masculino y situación de riesgo nutricional y escolares de género femenino de disturbio nutricional.

PALABRAS CLAVE: Estado Nutricional; Desarrollo motor; Estudiantes.

DESEMPENHO MOTOR DE ESCOLARES EM DIFERENTES ESTÁGIOS NUTRICIONAIS: AVALIAÇÃO DO PROCESSO DAS HABILIDADES MOTORAS FUNDAMENTAIS, SALTO CHUTE E ARREMESSO.

RESUMO

A presente investigação propôs analisar o desempenho motor de escolares entre 7 e 10 anos da rede pública do município Araguaína - To em diferentes estágios nutricionais. Para a obtenção dos índices nutricionais, adotou-se os critérios de Warterlow (1976 -1977) empregando como padrão de referencia o NCHS e utilizando - se do programa de avaliação do estado nutricional em pediatria (PED2000). Na avaliação do desempenho motor dos escolares, nos seus aspectos qualitativos, os padrões fundamentais de movimento foram realizados seguindo a matriz de análise dos padrões fundamentais de movimento proposto por Gallahue (1994). Na análise dos dados, utilizou-se a estatística descritiva, calculando-se a média e desvio padrão. O teste de Mann-Whitney foi utilizado para comparar grupos em dados qualitativos. Participaram da pesquisa 398 escolares, sendo, 47,74 % (n=190) do gênero masculino e 52,26% (n=208) do gênero feminino, 8,48 % da população total. Considerando a característica individual do estado nutricional com relação ao desempenho motor, no presente estudo foi visualizado uma superioridade dos índices de maturação dos escolares do gênero masculino em detrimento dos escolares do gênero feminino em todos os movimentos investigados, e superioridade no desempenho dos movimentos de escolares em situação de adequação nutricional (eutróficos) nos fundamentos salto na horizontal e arremesso, diferentemente ao movimento fundamental chute em que foi visualizado uma superioridade dos índices de maturação de escolares do gênero masculino em situação de risco nutricional e escolares do gênero feminino em situação de distúrbio nutricional.

PALAVRAS CHAVE: Estado Nutricional; Desenvolvimento motor; Escolares.

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